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Water Resources Data for Iowa

Water Year 1977



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U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

Prepared in cooperation with the Iowa Geological Survey
and with other State and Federal agencies

CALENDAR FOR WATER YEAR 1977

1976

OCTOBER

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1977

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Water Resources Data for Iowa

Water Year 1977



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT IA-77-1

**Prepared in cooperation with the Iowa Geological Survey
and with other State and Federal agencies**

UNITED STATES DEPARTMENT OF THE INTERIOR

CECIL D. ANDRUS, Secretary

GEOLOGICAL SURVEY

H. William Menard, Director

**For information on the water program in Iowa write to
District Chief, Water Resources Division
U.S. Geological Survey
P.O. Box 1230
Iowa City, Iowa 52240**

1978

Preface

This report was prepared by personnel of the Iowa district of the Water Resources Division of the U.S. Geological Survey under the supervision of S. W. Wiitala, District Chief, and Alfred Clebsch, Jr., Regional Hydrologist, Central Region. It was done in cooperation with the State of Iowa and with other agencies.

This report is one of a series issued by Iowa. General direction for the series is by J. S. Cragwall, Jr., Chief Hydrologist, U.S. Geological Survey, and G. W. Whetstone, Assistant Chief Hydrologist for Scientific Publications and Data Management.

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8-22-78
I. L. BUNHAUSER

GAGING STATIONS, IN DOWNSTREAM ORDER,
FOR WHICH RECORDS ARE PUBLISHED

VII

[Letter after station name designates type of data:
(d) discharge, (c) chemical, (b) biological,
(m) microbiological, (t) water temperature, (s) sediment]

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WATER RESOURCES DATA FOR IOWA, 1977

INTRODUCTION

Water resources data for the 1977 water year for Iowa consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water-levels of wells. This report contains discharge records for 111 gaging stations; stage or contents for 5 lakes and reservoirs; water quality for 21 gaging stations, and water levels for 34 observation wells. Also included are data for 125 crest-stage partial-record stations and 202 low-flow partial-record stations. Additional water data were collected at various sites, not part of the systematic data collection program, and are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Iowa.

Records of discharge (or stage) of streams, and contents (or stage) of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled, "Surface Water Supply of the United States." Through water year 1960, these water-supply papers were in an annual series and then in a 5-year series for 1961-65 and 1966-70. Records of chemical quality, water temperatures, and suspended sediment were published from 1941 to 1970 in an annual series of water-supply papers entitled, "Quality of Surface Waters of the United States." Records of ground-water levels were published from 1935 to 1974 in a series of water-supply papers entitled, "Ground-Water Levels in the United States." Water-supply papers may be consulted in the libraries of the principal cities in the United States or may be purchased from Branch of Distribution, U.S. Geological Survey, 604 South Pickett Street, Alexandria, VA. 22304.

For water years 1961 through 1974, streamflow data were released by the Geological Survey in annual reports on a State-boundary basis. Water-quality records for water years 1964 through 1974 were similarly released either in separate reports of in conjunction with streamflow records. Beginning with the 1975 water year, water data for streamflow, water quality, and ground water are published as an official Survey report on a State-boundary basis. These official Survey reports carry an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this report is identified as "U.S. Geological Survey Water-Data Report IA-76-1." Water-Data reports are for sale by the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia, 22161.

COOPERATION

The U.S. Geological Survey and organizations in the State of Iowa have had cooperative agreements for the systematic collection of streamflow records since 1914, for ground water levels since 1935, and for water-quality records since 1943. Organizations that assisted in collecting data through cooperative agreement with the Survey in 1976 are:

Iowa Geological Survey, Stanley C. Grant, director and state geologist

University of Iowa, Institute of Hydraulic Research, Robert G. Hering, dean of College of Engineering and John P. Kennedy, director

Iowa Department of Transportation, Highway Division, Donald E. McLean, Director, and Vernon J. Marks, research engineer

Iowa Natural Resources Council, James R. Webb, director

Iowa State University, Richard E. Hasbrook, contracts and grants officer, and Agricultural Experiment Station, Thamon Hazen, assistant director; Department of Agricultural Engineering, C. W. Bockhop, head; and Energy and Minerals Resources Research Institute, James E. Gulliford, Ass't Division Chief.

City of Cedar Rapids, Donald Canney, mayor

City of Des Moines, Leo L. Johnson, public works director

City of Fort Dodge, Vincent B. Gardner, general manager, department of municipal utilities

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army, in collecting flow records for 64 gaging stations, and by the Environmental Protection Agency in collecting records for seven water-quality stations published in this report. Assistance was also furnished by NOAA - National Weather Service, U.S. Department of Commerce.

The following organizations aided in collecting records:

Union Electric Co.; Des Moines Water Works; Hospers Rural Water System No. 1; Ottumwa Water Works; Waterloo Sewage Treatment Plant; University of Iowa; and cities of Ames, Charles City, Clear Lake, Iowa City, Marshalltown, Sioux City, and Waterloo.

Organizations that supplied data are acknowledged in station descriptions.

ACKNOWLEDGMENT

Iowa district personnel who contributed significantly to the collection and preparation of the data in this report were: I. L. Burmeister, chief, data section, assisted by O. J. Ramsvick, F. E. Lindstrom, W. J. Matthes, and S. A. Dvorak.

HYDROLOGIC CONDITIONS

Annual runoff for the 1977 water year generally varied from 1/2 inch in the northwestern part of the state to 3 inches in the eastern part. Amounts of 4 to 6 inches occurred on tributary streams in the extreme Southwest and in the Iowa River basin downstream from Marshalltown. Normal runoff is 2 inches in the Northwest to 8 inches in the Southwest.

The water year began with extreme low-flow conditions continuing from the summer of 1976. Below normal precipitation for the period June 1976 to August 1977 caused deficient streamflow during almost all of this period. Emergency operation of releases from the Coralville and Red Rock Reservoirs in February, June and July was implemented to conserve storage and prolong the availability of the minimum needs for water users. Fortunately, after 16 consecutive months of deficient streamflow at the index station on the Des Moines River at Ft. Dodge, 13 months on the Cedar River at Cedar Rapids, and 7 months on the Nishnabotna River above Hamburg, heavy thunderstorms occurred throughout the state in August. Many rural areas experienced flooding which caused additional losses to drought-stricken crops. The water year ended with excessive streamflow in the Southwest, deficient in the North Central, and normal elsewhere. See figure 3 for comparative runoff values of the three representative gaging stations.

DEFINITION OF TERMS

Terms related to streamflow, water-quality and other hydrologic data, as used in this report, are defined below. See also table for converting English Units to International System (SI) Units on the inside of the back cover.

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Algae are mostly aquatic single-celled, colonial, or multi-celled plants, containing chlorophyll and lacking roots, stems, and leaves.

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Artesian means confined and is used to describe a well in which the water level stands above the top of the aquifer, tapped by the well. A flowing artesian well is one in which the water level is above the land surface.

Bacteria are microscopic unicellular organisms, typically spherical, rod-like, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory these bacteria are defined as the organisms which produce colonies within 24 hours when incubated at 35°C $\pm$ 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Fecal coliform bacteria are bacteria that are present in the intestine or feces of warmblooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms which produce blue colonies within 24 hours when incubated at 44.5°C $\pm$ 0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Fecal streptococcal bacteria are bacteria found also in intestines of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C $\pm$ 1.0°C on M-enterococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Bed material is the unconsolidated material of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the mass per unit area or volume of habitat.

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter (g/m^3), and periphyton and benthic organisms in grams per square meter (g/m^2).

Dry mass refers to the mass of residue present after drying in an oven at 60°C for zooplankton and 105°C for periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry mass values are expressed in the same units as ash mass.

Organic mass or volatile mass of the living substance is the difference between the dry mass and the ash mass, and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash mass and dry mass.

Wet mass is the mass of living matter plus contained water.

Bottom material: See Bed material.

Cells/volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually milliliters (mL) or liters (L).

Cfs-day is the volume of water represented by flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-ft, about 646,000 gallons or 2,445 cubic meters.

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water, and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with natural water color or with carbonaceous organic pollution from sewage or industrial wastes.

Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common pigments in plants.

Color unit is produced by one milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Cubic feet per second per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Cubic foot per second (FT³/S, ft³/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Discharge is the volume of water (or more broadly, total fluid), plus suspended sediment that passes a given point within a given period of time.

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Dissolved refers to the amount of a substance present in true chemical solution. In practice, however, the term includes all forms of the substance that will pass through a 0.45-micrometer membrane filter, and thus may include some very small (colloidal) suspended particles. Analyses are performed on filtered samples.

Diversity index is a numerical expression of evenness of distribution of aquatic organisms. The formula for diversity index is:

$$d' = - \sum_{i=1}^s \frac{n_i}{n} \log_2 \frac{n_i}{n}$$

Where n is the number of individuals per taxon, n is the total number of individuals, and s is the total number of taxa in the sample of the community. Diversity index values range from zero, when all the organisms in the sample are the same, to some positive number, when some or all of the organisms in the sample are different.

Drainage area of a stream at a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise noted.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate (CaCO_3).

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an 8-digit number.

Methylene blue active substance (MBAS) is a measure of apparent detergents. This determination depends on the formation of a blue color when methylene blue dye reacts with synthetic detergent compounds.

Micrograms per gram ($\mu\text{g/g}$) is a unit expressing the concentration of a chemical element as mass (micrograms) of the element sorbed per unit mass (gram) of sediment.

Micrograms per liter ($\mu\text{g/L}$, $\mu\text{g/l}$) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (MG/L, mg/l) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represents the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/l, and is based on the mass of sediment per liter of water-sediment mixture.

Organism is any living entity, such as an insect, phytoplankter, or zooplankter.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per area habitat, usually square meters (m²), acres, or hectares. Periphyton, benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually milliliters (ml) or liters (l). Numbers of planktonic organisms can be expressed in these terms.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

Partial-record station is a particular site where limited streamflow and/or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle size is the diameter, in millimeters (mm), of suspended sediment or bed material determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with recommendations made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay.....	0.00024 - 0.004	Sedimentation.
Silt.....	.004 - .062	Sedimentation.
Sand.....	.062 - 2.0	Sedimentation or sieve.
Gravel.....	2.0 - 64.0	Sieve.

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic material is removed and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native-water analysis.

Percent composition is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, mass or volume.

Pesticides are chemical compounds used to control undesirable plants and animals. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides. Insecticides and herbicides, which control insects and plants respectively, are the two categories reported.

Picocurie (PC, pCi) is one trillionth (1×10^{-12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10} radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

Periphyton is the assemblage of microorganisms attached to and growing upon solid surfaces. While primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms. Periphyton is a useful indicator of water quality.

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment, and are commonly known as algae.

Blue-green algae are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water.

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells per milliliter (cells/ml) of sample.

Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algal mats or floating "moss" in lakes. Their concentrations are expressed as number of cells per milliliter (cells/ml) of sample.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column, and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers.

Polychlorinated biphenyls (PCBs) are industrial chemicals that are mixtures of chlorinated biphenyl compounds having various percentages of chlorine. They are similar in structure to organochlorine insecticides.

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic and chemosynthetic activity of producer organisms (chiefly green plants). The rate of primary production is estimated by measuring the amount of oxygen released (oxygen method) or the amount of carbon assimilated by the plants (carbon method).

Milligrams of carbon per area or volume per unit time ($\text{mg C}/(\text{m}^2, \text{time})$ for periphyton and macrophytes and $\text{mg C}/(\text{m}^3, \text{time})$ for phytoplankton) are units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon 14). The carbon 14 method is of greater sensitivity than the oxygen light and dark bottle method, and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

Milligrams of oxygen per area or volume per unit time ($\text{mg O}_2/\text{m}^2, \text{time}$) for periphyton and macrophytes and $\text{mg O}_2/(\text{m}^3, \text{time})$ for phytoplankton are the units for expressing primary productivity. They define production and respiration rates as estimated from changes in the measured dissolved oxygen concentration. The oxygen light and dark bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period.

Runoff in inches (IN, in) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil

characteristics, land usage, and quantity and intensity of precipitation.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/l).

Suspended-sediment discharge (tons/day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight, or by volume, that passes a section in a given time. It is computed by multiplying discharge times mg/l times 0.0027.

Suspended-sediment load is quantity of suspended sediment passing a section in a specified period.

Total sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry weight or volume, that passes a section during a given time.

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Sodium adsorption ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions with soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in micromhos per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from stream to stream and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and volume of water per unit of time, flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lived.

Natural substrates refers to any naturally occurring emerged or submersed solid surface, such as a rock or tree, upon which an organism lived.

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multi-plate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton collection.

Surface area of a lake is that area outlined on the latest U.S.G.S. topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the areas are computed from the best maps available at the time planimetered. All areas shown are those for the stage when the planimetered map was made.

Surficial bed material is that part (0.1 to 0.2 ft) of the bed material that is sampled using U.S. Series Bed-Material Samplers.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of the total concentration in a water-sediment mixture. The water-sediment mixture is associated with (or sorbed on) that material retained on a 0.45 micrometer filter.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchical scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, Hexagenia limbata, is the following:

Kingdom.....Animal
 Phylum.....Arthropoda
 Class.....Insecta
 Order.....Ephemeroptera
 Family.....Ephemeridae
Genus.....Hexagenia
Species.....Hexagenia limbata

Thermograph is a thermometer that continuously and automatically records, on a chart, the water temperature of a stream. "Temperature recorder" is the term used to indicate the presence of a thermograph or a digital mechanism that automatically records water temperatures on paper tape.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the water year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration in milligrams per liter by 0.00136.

Tons per day is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour day.

Total (as used in tables of chemical analyses) refers to the amount of a substance that is present both in solution and in suspension. Analyses are performed on representative samples of water-suspended sediment mixtures.

Total load (tons) is the total quantity of any individual constituent, as measured by dry mass or volume, that is dissolved in a specific amount of water (discharge) during a given time. It is computed by multiplying the total discharge, times the mg/L of the constituent, times the factor 0.0027, times the number of days.

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

WRD is used as an abbreviation for "Water-Resources Data" in the REVISED RECORDS paragraph to refer to State annual basic-data reports published before 1975.

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports.

DOWNSTREAM ORDER AND STATION NUMBER

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a main-stream station are listed between stations on the main stream in the order in which those tributaries enter the main stream. Stations on tributaries entering above all main-stream stations are listed before the first main-stream station. Stations on tributaries to tributaries are listed in a similar manner. In the lists of gaging stations and water-quality stations in the front of this report the rank of tributaries is indicated by indention, each indention representing one rank.

As an added means of identification and each hydrologic station and partial-record station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete 8-digit number for each station, such as 05387500, which appears just to the left of the station name, includes the 2-digit part number "05" plus the 6-digit downstream order number "387500."

Downstream order station numbers are not assigned to miscellaneous sites where only random water-quality samples or discharge measurements are taken.

NUMBERING SYSTEM FOR WELLS

Each well is identified by means of (1) a 15-digit number that is based on the grid system of latitude and longitude, and (2) a local number that is provided for continuity with older reports and for other use as dictated by local needs. The former number serves not only to identify the well but also to locate it as a point on a map. For maximum utility, latitude and longitude code numbers are determined to seconds in order that each well may have a unique number. The first six digits represent degrees, minutes, and seconds of latitude; "N" refers to north

latitude and is used to break the string of numbers; the next seven digits are degrees, minutes, and seconds of west longitude; and the number after the decimal point is a sequential number assigned in the order in which the wells are located in a 1-second quadrangle.

Latitude and longitude coordinates for wells:

- 1 414315N 0912520.1
- 2 414315N 0912520.2
- 3 414316N 0912519.1

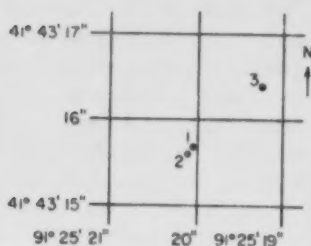


Figure 1. Latitude-longitude well number.

The local well numbers are in accordance with the Bureau of Land Management's system of land subdivision. Each well number is made up of three segments. The first segment indicates the township, the second the range, and the third the section in which the well is situated. The letters after the section number which are assigned in a counter-clockwise direction (beginning with "a" in the northeast quarter), represent subdivisions of the section. The first letter denotes the 160-acre tract, the second the 40-acre tract, and the third the 10-acre tract. Numbers are added as suffixes to distinguish wells in the same tract. Thus, the number 96-20-3cddb1 designates the well in the SE1/4 NW1/4 sec.3, T.96 N., R.20 W.

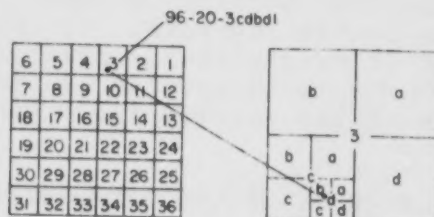


Figure 2. Local well numbering system for well 96-20-3cddb1.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural conditions. Data collected at a bench-mark station may be used to separate effects of natural from manmade changes in other basins which have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped bench-mark basin.

National stream-quality accounting network (NASQAN) is a data collection network designed by the U.S. Geological Survey to meet many of the information demands of agencies or groups involved in national or regional water-quality planning and management. Both accounting and broad-scale monitoring objectives have been incorporated in the network design. Areal configuration of the network is based on river-basin accounting units (identified by 8-digit hydrologic-unit numbers) designated by the Office of Water Data Coordination in consultation with the Water Resources Council. Primary objectives of the network are (1) to depict areal variability of streamflow and water-quality conditions nationwide on a year-by-year basis and (2) to detect and assess long-term changes in stream quality.

Pesticide program is a network of regularly sampled water-quality stations where samples are collected to determine the concentration and distribution of pesticides in streams where potential contamination could result from the application of the commonly used insecticides and herbicides. Operation of the network is a Federal interagency activity.

Radiochemical program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Tritium network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

EXPLANATION OF STAGE AND WATER-DISCHARGE

Collection and computation of data

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and contents of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge

relation or the stage-capacity relation, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from either direct readings on a nonrecording gage or from a water-stage recorder that gives either a continuous graph of the fluctuations or a tape punched at selected time intervals. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey. These methods are described in standard text-books, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chapter A6.

For stream-gaging stations, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves. If extensions to the rating curves are necessary to express discharge greater than measured, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs), step-backwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean discharge are computed from the daily figures. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is computed by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is basically the shifting-control method.

At some stream-gaging stations the stage-discharge relation is affected by backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

At some northern stream-gaging stations the stage-discharge relation is affected by ice in the winter, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of the gage-height record and occasional winter discharge measurements. Consideration is given to the available information on temperature and precipitation, notes by gage observers and hydrologists, and comparable records of discharge for other stations in the same or nearby basins.

For a lake or reservoir station, capacity tables giving the contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly change in contents is computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys the computed contents may be increasingly in error due to the gradual accumulation of sediment.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records for other stations in the same or nearby basins. Likewise, daily contents may be estimated on the basis of operator's log, prior and subsequent records, inflow-outflow studies, and other information.

The data in this report generally comprise a description of the station and tabulations of daily and monthly figures. For gaging stations on streams or canals a table showing the daily discharge and monthly and yearly discharge is given. For gaging stations on lakes and reservoirs a monthly summary table of stage and contents or a table showing the daily contents is given. Tables of daily mean gage heights are included for some streamflow stations and for some reservoir stations. Records are published for the water year, which begins on October 1 and ends on September 30.

The description of the gaging stations gives the location, drainage area, period of record, notations of revisions of previously published records, type and history of gages, general remarks, average discharge, and extremes of discharge or contents. The location of the gaging station and the drainage area are obtained from the most accurate maps available. River mileage, given under "LOCATION" for some stations, is that determined and used by the Corps of Engineers or other agencies. Periods for which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD."

Previously published streamflow records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published

along with the current records in one of the annual or compilation reports. In order to make it easier to find such revised records, a paragraph headed "REVISED RECORDS" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1965 stands for the water year October 1, 1964, to September 30, 1965. If no daily, monthly, or annual figures of discharge are affected by the revision, the fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published in the annual series of reports.

The type of gage currently in use, the datum of the present gage above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." In references to datum of gage, the phrase "mean sea level" denotes "Sea Level Datum of 1929" as used by the Topographic Division of the Geological Survey unless otherwise qualified.

Information pertaining to the accuracy of the discharge records and to conditions which affect the natural flow of the gaging station is given under "REMARKS." For reservoir stations information on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir is given under "REMARKS."

The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE"; it is not given for stations having fewer than 5 complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. In addition, the median of yearly mean discharges is given for stream-gaging stations having 10 or more complete years of record if the median differs from the average by more than 10 percent. Under "EXTREMES" are given first, the extremes for the period of record, second, information available outside the period of record, and last, those for the current year. Unless otherwise qualified, the maximum discharge (or contents) is the instantaneous maximum corresponding to the crest stage obtained by use of a water-stage recorder (graphic or digital), a crest-

stage gage, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur on the same day as the maximum discharge (or contents), it is given separately. Similarly, the minimum is the instantaneous minimum unless otherwise qualified. For some stations peak discharges are listed with EXTREMES FOR THE CURRENT YEAR; if they are, all independent peaks, including the maximum for the year, above the selected base with the time of occurrence and corresponding gage heights are published in tabular format. The base discharge, which is given in the table heading, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030, 1:30 p.m. is 1330. The minimums for these stations are published in a separate paragraph following the table of peaks.

The daily table for stream-gaging stations gives the mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also may be expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN."), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion, if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches. In the yearly summary below the monthly summary, the figures shown are the appropriate daily discharges for the calendar and water years.

Footnotes to the table of daily discharges are introduced by the word "NOTE." Footnotes are used to indicate periods for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Periods of backwater from an unusual source, of indefinite stage-discharge relation, or of any other unusual condition at the gage site are indicated only if they are a month or more in length and the accuracy of the records is affected. Days on which the stage-discharge relation is affected by ice are not indicated. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station and a monthly

summary table of stage or contents. For some reservoirs a table showing daily contents is given. A skeleton table of capacity at given stages is published for most reservoirs.

Data collected at partial-record stations follow the information for continuous record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. Occasionally, a series of discharge measurements are made within a short time period to investigate the seepage gains or losses along a reach of a stream or to determine the low-flow characteristics of an area. Such measurements are also given in special tables following the tables of partial-record stations.

Accuracy of data

The accuracy of streamflow data depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretation of records.

The station description under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent; "good" within 10 percent; and "fair" within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Figures of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharges of less than 1 cfs; to tenths between 1.0 and 10 cfs; to whole numbers between 10 and 1,000 cfs; and to 3 significant figures above 1,000 cfs. The number of significant figures used is based solely on the magnitude of the figure. The same rounding rules apply to discharge figures listed for partial-record stations.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff in inches are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in

computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Other data available

Information of a more detailed nature than that published for most of the gaging stations, such as observations of water temperatures, discharge measurements, gage-height records, and rating tables, is on file in the district office. Also, most gaging-station records are available in computer-usable form and many statistical analyses have been made.

Information on the availability of unpublished data or statistical analyses may be obtained from the district office.

Records of discharge collected by agencies other than the Geological Survey

Records of discharge not published by the Geological Survey were collected during water year 1976 at 58 sites in Iowa by the Corps of Engineers, U.S. Army. The National Water Data Exchange, Water Resources Division, U.S. Geological Survey, National Center, Reston, Va. 22092, maintains an index of such sites. Information on records available at specific sites can be obtained upon request.

EXPLANATION OF WATER QUALITY RECORDS

Collection and examination of data

Surface water samples for analyses usually are collected at or near gaging stations. The quality-of-water records are given immediately following the discharge records at these stations.

The descriptive heading for water-quality records gives the period of record for all water-quality data; the period of daily record for parameters that are measured on a daily basis (specific conductance, pH, dissolved oxygen, water temperature, sediment discharge, etc.); extremes for the period of daily record; extremes for the current year; and general remarks.

Water analysis

Most methods for collecting and analyzing water samples are described in the U.S. Geological Survey Techniques of Water-Resources Investigations listed on a following page.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the district office.

Water temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for water-discharge stations. Although these temperatures are measured on different days of the month, an analysis of these data for each month for a long period of record will indicate significant thermal characteristics of the stream. Data have been analyzed for the period of record through 1974 for gaging stations with 10 or more years of record. A summary on monthly maximum, minimum and mean temperatures were published in the 1974 state report. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small daily temperature change; shallow streams may have a daily range of several degrees and may follow closely

the changes in air temperature. Some streams may be affected by waste-heat discharge.

At stations where recording instruments are used, either mean temperatures or maximum and minimum temperatures for each day are published.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided day method. For periods when no samples are collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples are collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observation, such data are useful in establishing seasonal relations between quality and streamflow in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of the quantities of suspended sediment, records of periodic measurements of the particle-size distribution of the suspended sediment and bed material are included.

EXPLANATION OF GROUND-WATER LEVEL RECORDS

Collection of the data

Only ground-water level data from a basic national network of observation wells are published herein. These water-level meas-

urements are intended to provide a sampling and historical record of water-level changes in the nation's most important aquifers.

Each well is identified by means of (1) a 15-digit number that is based on latitude and longitude, and (2) a local number that is provided for local needs. See figures 1 and 2.

Measurements are made in many types of wells under varying conditions of access and of different temperatures, hence neither the method of measurement nor the equipment can be standardized. At each observation well, however, the equipment and techniques used are those that will insure that measurements at each well are consistent.

Water-level measurements in this report are given in feet with reference to either mean sea level (msl) or land-surface datum (lsd). Mean sea level is the datum plane on which the national network of precise levels is based; land-surface datum is a datum plane that is approximately at land surface at each well. If known, the altitude of the land-surface datum above mean sea level is given in the well description. The height of the measuring point (MP) above or below land-surface datum is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (eom).

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth to water of several hundred feet, the error of determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water, the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given only to a tenth of a foot or a larger unit.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

Thirty-two manuals by the U.S. Geological Survey have been published to date in the series on techniques describing procedures for planning and executing specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) is on surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises. The reports listed below are for sale by the U.S. Geological Survey, Branch of Distribution, 604

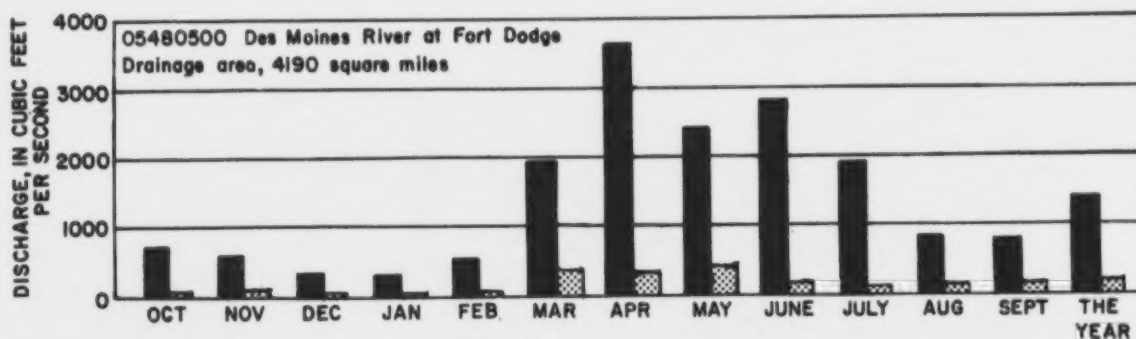
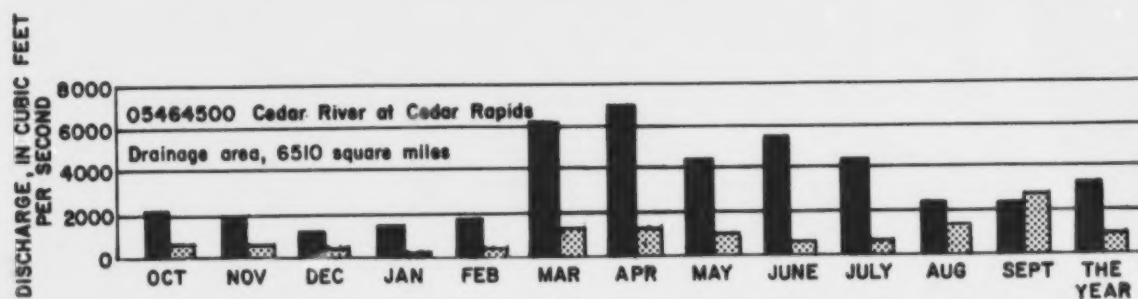
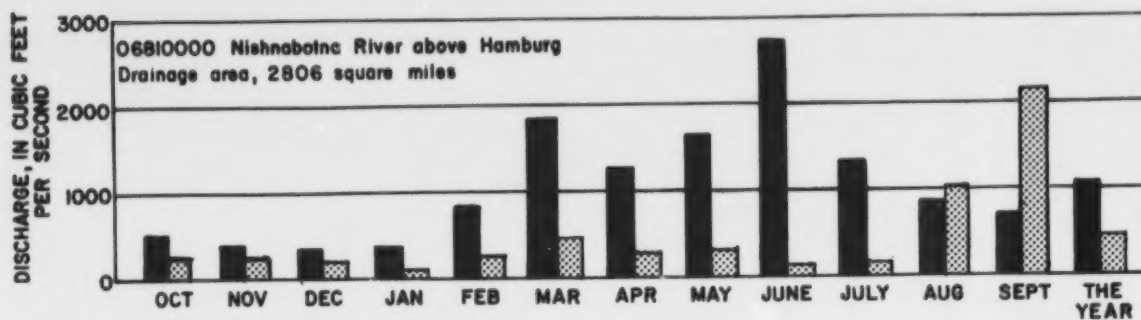
South Picket Street, Alexandria, VA 22304 (authorized agent of the Superintendent of Documents, Government Printing Office).

NOTE: When ordering any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations".

- 1-D1. Water temperature-influential factors, field measurement, and data presentation, by H. H. Stevens Jr., J. P. Ficke, and G. P. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 p. \$1.60.
- 2-D1. Application of surface geophysics to ground-water investigations, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages. \$1.90.
- 2-E1. Application of borehole geophysics to water-resources investigations, by W. S. Keys and L. H. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages. \$1.75.
- 3-A1. General field and office procedures for indirect discharge measurements, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages. \$0.25.
- 3-A2. Measurement of peak discharge by the slope-area method, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages. \$0.20.
- 3-A3. Measurement of peak discharge at culverts by indirect methods, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages. \$0.40.
- 3-A4. Measurement of peak discharge at width contractions by indirect methods, by H. P. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages. \$1.00.
- 3-A5. Measurement of peak discharge at dams by indirect methods, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages. \$0.30.
- 3-A6. General procedure for gaging streams, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3. Chapter A6, 1968, 13 pages. \$0.20.
- 3-A7. Stage measurements at gaging stations, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages. \$0.45.
- 3-A8. Discharge measurements at gaging stations, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages. \$1.25.

- 3-A11. Measurement of discharge by moving-boat method, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages. \$0.40.
- 3-A12. Fluorometric procedures for dye tracing, by J. F. Wilson Jr.: USGS--TWRI Book 3, Chapter A12. 1968. 31 pages. \$1.35. Not currently available.
- 3-B1. Aquifer-test design, observation, and data analysis, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages \$0.70.
- 3-B2. Introduction to ground-water hydraulics-a programed text for self-instruction, by D. S. Bennett: USGS--TWRI Book 3, Chapter B2 1976. 172 pages.
- 3-C1. Fluvial sediment concepts, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages. \$0.65.
- 3-C2. Field methods for measurement of fluvial sediment, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2, 1970. 59 pages \$0.70.
- 3-C3. Computation of fluvial-sediment discharge, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages. \$1.15.
- 4-A1. Some statistical tools in hydrology, by H. C. Riggs: USGS--TWRI Book 4 Chapter A1. 1968. 39 pages. \$0.30.
- 4-A2. Frequency curves, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages. \$0.20.
- 4-B1. Low-flow investigations, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972, 18 pages. \$0.65.
- 4-B2. Storage analyses for water supply, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages. \$0.75.
- 4-B3. Regional analyses of streamflow characteristics, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages. \$0.75.
- 4-D1. Computation of rate and volume of stream depletion by wells, by C. T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 pages. \$0.65.
- 5-A1. Methods for collection and analysis of water samples for dissolved minerals and gases, by Eugene Brown, M. W. Skougstad, and M. J. Fishman: USGS--TWRI Book 5, Chapter A1. 1970. 160 gages. \$2.40.

- 5-A2. Determination of minor elements in water by emission spectroscopy, by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages. \$0.80.
- 5-A3. Methods for analysis of organic substances in water, by D. F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 pages. \$0.90.
- 5-A4. Methods for collection and analysis of aquatic biological and microbiological samples, by K. V. Slack, R. C. Averett, P. E. Greeson, and R. G. Lipscomb: USGS--TWRI Book 5, Chapter A4. 1973. 165 pages. \$1.95.
- 5-C1. Laboratory theory and methods for sediment analysis, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages. \$0.65.
- 7-C1. Finite-difference model for aquifer simulation in two dimensions with results of numerical experiments, by P. C. Trescott, G. P. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.
- 8-A1. Methods of measuring water levels in deep wells, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages. \$0.70.
- 8-B2. Calibration and maintenance of vertical-axis type current meters, by G. P. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages. \$0.40.



 Mean of monthly and yearly mean discharges for water years 1941-70.
 Monthly and yearly mean discharges during 1977 water year.

FIGURE 3.--RUNOFF DURING 1977 WATER YEAR COMPARED WITH MEAN RUNOFF FOR PERIOD 1941-70 FOR THREE REPRESENTATIVE GAGING STATIONS

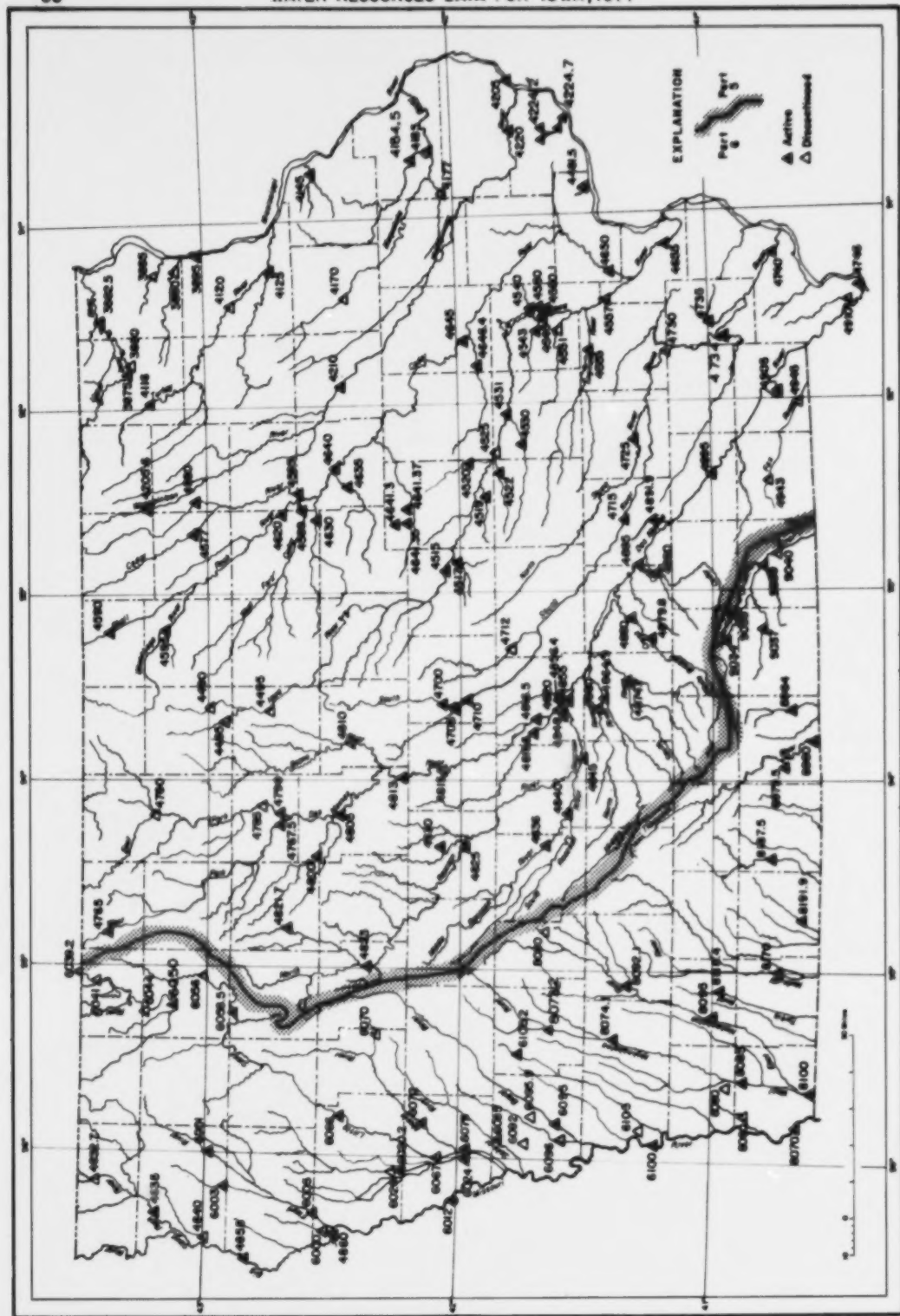


Figure 1. — Map of Iowa showing location of continuous-record gaging stations.

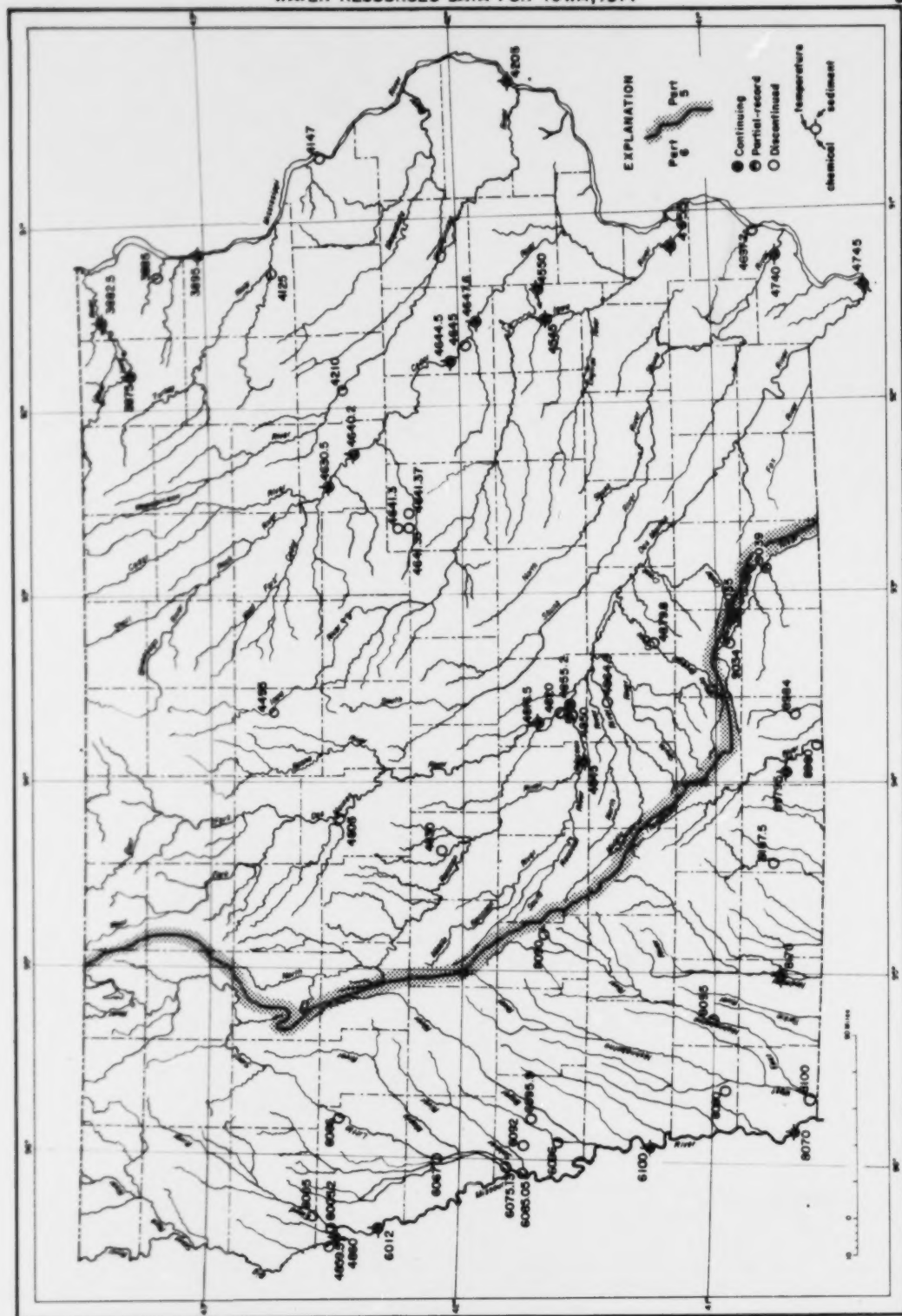


Figure 2.--Map of Iowa showing location of water-quality stations.

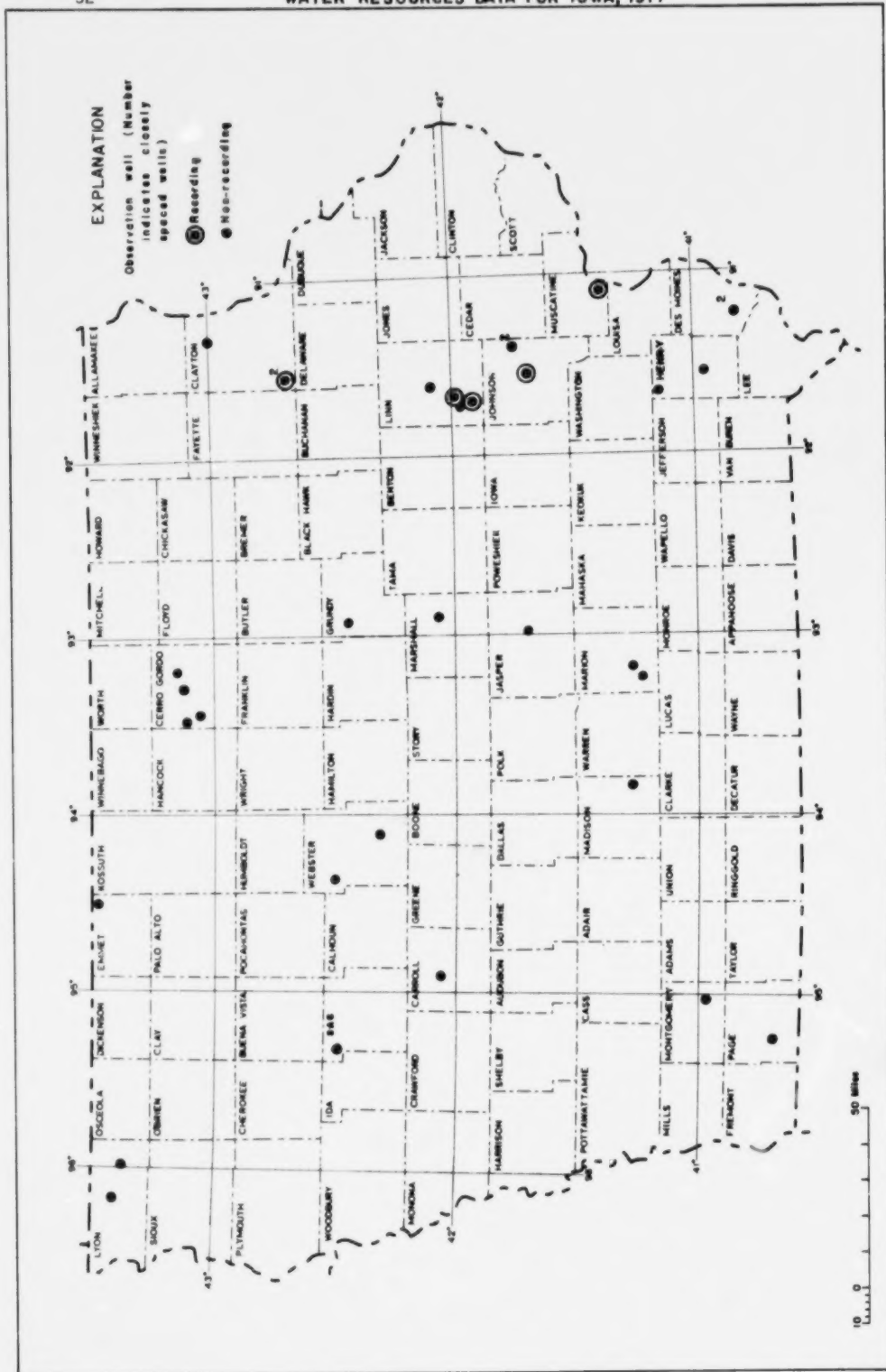


Figure 6.--Location of observation wells in Iowa.

DISCONTINUED GAGING STATIONS

The following stream-gaging stations have been discontinued in Iowa. Continuous daily streamflow records were collected and published for the period of record shown for each station.

Discontinued gaging stations

Station name	Station number	Drainage area (sq mi)	Period of record
Upper Iowa River near Decorah, Iowa.	05368000	558	1913-14; 1919-27; 1933-51.
Paint Creek at Waterville, Iowa.	05388500	42.8	1952-73.
Yellow River at Ion, Iowa.	05369000	221	1934-51.
Mississippi River at Clayton, Iowa.	05411500	9,200	1930-36.
Turkey River at Elkader, Iowa.	05412000	891	1932-42.
Maquoketa River near Manchester, Iowa.	05417000	305	1933-73.
Maquoketa River near Delhi, Iowa.	05417500	347	1933-40.
Bear Creek near Monmouth, Iowa.	05417700	61.3	1957-76.
Maquoketa River above North Fork Maquoketa River near Maquoketa, Iowa.	05418000	930	1913-14.
Wapsipinicon River at Stone City, Iowa.	05421500	1,324	1903-14.
West Branch (West Fork) Iowa River near Klemme, Iowa.	05448500	112	1948-59.
East Branch Iowa River near Klemme, Iowa.	05449000	133	1948-76.
Iowa River near Iowa Falls, Iowa.	05450000	665	1911-14.
Upper Pine Lake at Eldora, Iowa.	05450500	14.9	1926-70.
Lower Pine Lake at Eldora, Iowa.	05451000	15.9	1926-70.
Iowa River near Belle Plaine, Iowa.	05452500	2,455	1939-59.
Lake Macbride near Solon, Iowa.	05453500	27.0	1936-71.
Old Mans Creek near Iowa City, Iowa.	05455100	201	1950-64.
Cedar River at Mitchell, Iowa.	05457500	826	1933-42.
Shell Rock River at Marble Rock (Greene), Iowa.	05460500	1,318	1933-53.
Shell Rock River at Greene, Iowa.	05461000	1,357	1933-42.
Shell Rock River near Clarksville, Iowa.	05461500	1,626	1915-27; 1932-34.
Indian Creek near Mingo, Iowa.	05471200	276	1956-75.
Lake Keomah near Oskaloosa, Iowa.	05472000	3.06	1926-71.
Skunk River at Coppock, Iowa.	05473000	2,916	1913-44.
East Fork Des Moines River near Burt, Iowa.	05478000	146	1971-74.
East Fork Des Moines River near Hardy, Iowa.	05478500	1,268	1940-54.
Des Moines River near Fort Dodge, Iowa.	05479500	3,753	1911-13.
Des Moines River near Boone, Iowa.	05481500	5,511	1920-68.
Des Moines River at Des Moines, Iowa.	05482000	6,245	1906-08; 1918-61.
Storm Lake at Storm Lake, Iowa.	05482140	20.3	1970-75.
Springbrook Lake near Guthrie Center, Iowa.	05483500	5.18	1936-71.
Raccoon River at Des Moines, Iowa.	05485000	3,590	1902-03.
Lake Ahquabi near Indianola, Iowa.	05487000	4.93	1936-71.
White Breast Creek near Knoxville, Iowa.	05488000	380	1945-62.
Lake Vapello near Drakesville, Iowa.	05490000	7.75	1936-71.
Sugar Creek near Keokuk, Iowa.	05491000	105	1922-31; 1958-73.
Fox River at Bloomfield, Iowa.	05494300	87.7	1957-73.
Fox River at Cantril, Iowa.	05494500	161	1940-51.
Rock River at Rock Rapids, Iowa.	05493270	788	1959-74.
Dry Creek at Hawarden, Iowa.	05484000	48.4	1948-59.
Perry Creek at 38th Street, Sioux City, Iowa.	05600000	85.1	1945-69.
West Fork ditch at Holly Springs, Iowa.	05602000	399	1939-69.
Loon Creek near Orleans, Iowa.	05603920	31	1971-74.
Spirit Lake outlet at Orleans, Iowa.	05604100	75.6	1971-74.
Wilford Creek at Wilford, Iowa.	05604400	146	1971-74.
Little Sioux River at Spencer, Iowa.	05605100	990	1936-42.
Little Sioux River at Gillett Grove, Iowa.	05605600	1,334	1958-73.
Little Sioux River near Kennebeck, Iowa.	05605700	2,738	1939-69.
Odebolt Creek near Arthur, Iowa.	05607000	39.3	1957-75.
Maple River at Turin, Iowa.	05607300	725	1939-41.
Little Sioux River near Blencoe (Turin), Iowa.	05607510	4,470	1939-42.
Steer Creek near Magnolia, Iowa.	05609200	9.26	1963-69.
Thompson Creek near Woodbine, Iowa.	05609590	6.97	1963-69.
Willow Creek near Logan, Iowa.	05609600	129	1972-75.
Indian Creek at Council Bluffs, Iowa.	05610500	7.89	1954-76.
Vaubonsie Creek near Bartlett, Iowa.	05608000	30.4	1946-59.
West Nishnabotna River at (near) White Cloud, Iowa.	05607500	987	1916-24.
Mule Creek near Malvern, Iowa.	05608000	10.6	1954-69.
David's Creek near Hamlin, Iowa.	05609000	26.0	1952-73.
Tarkio River (East Tarkio Creek) at Blanchard, Iowa.	05612000	200	1934-40.
West Nodaway River at Villisca, Iowa.	05616500	342	1910-26.
Money Creek near Russell, Iowa.	05603500	13.2	1962-62.
Chariton River near Centerville, Iowa.	05604000	708	1938-59.

WATER RESOURCES DATA FOR IOWA, 1977

DISCONTINUED WATER-QUALITY STATIONS

The following water-quality stations have been discontinued in Iowa. Continuous daily records of water temperature or sediment and monthly or periodic samples of chemical quality were collected and published for the period of record shown for each station. An asterisk (*) in the type of record column indicates that periodic data is available for that parameter subsequent to the period of daily record.

Discontinued water-quality stations

Station name	Station number	Drainage area (sq mi)	Type of Record	Period of record
Paint Creek at Waterville, Iowa.	05388500	42.8	Temp.	1952-56
Turkey River at Garber, Iowa.	05412500	1,545	Sed.	1952-57
Mississippi River at Dubuque, Iowa.	05414700	1,600	Temp.	1957-62
Maple River at Independence, Iowa.	05421000	1,048	Sed.	1957-62
Iowa River near Rowan, Iowa.	05449500	429	Chem.	1969-73
Fourmile Creek near Lincoln, Iowa.	05464130	13.78	Temp. *	1969-70
Half Mile Creek near Gladbrook, Iowa.	05464133	1.33	Temp. *	1967-70
Fourmile Creek near Traser, Iowa.	05464137	19.51	Sed. *	1967-70
Cedar River at Cedar Rapids, Iowa.	05464500	6,640	Temp. *	1957-62
Mississippi River at Burlington, Iowa.	05469720	4,000	Sed. *	1957-62
Des Moines River at Fort Dodge, Iowa.	05480500	4,190	Chem.	1944-54
Des Moines River at Des Moines, Iowa.	05482000	6,245	Temp.	1944-54
E. Fork Hardin Creek near Churdan, Iowa.	05483000	24.0	Sed.	1943-54
Raccoon River at Des Moines, Iowa.	05485000	3,590	Chem.	1969-73
Des Moines River below Raccoon River at Des Moines, Iowa.	05485500	9,770	Temp.	1969-73
Middle River near Indianola, Iowa.	05486490	503	Chem.	1969-73
White Breast Creek near Dallas, Iowa.	05487980	342	Sed.	1969-73
Big Sioux River at Sioux City, Iowa.	05489550	9,410	Temp.	1969-73
Floyd River at James, Iowa.	05600500	882	Sed.	1969-73
Floyd River at Sioux City, Iowa.	05600520	921	Chem.	1969-73
Little Sioux River at Correctionville, Iowa.	05606600	2,500	Temp.	1954-55
Little Sioux River near Kennebaw, Iowa.	05606700	2,738	Sed.	1951-62
Little Sioux River at River Sioux, Iowa.	05607513	3,600	Temp.	1950-62
Soldier River near Mondamin, Iowa.	05608505	440	Sed.	1950-57
Steer Creek near Magnolia, Iowa.	05609200	9.26	Chem.	1969-73
Thompson Creek near Woodbine, Iowa.	05609590	6.97	Temp.	1970-73
Willow Creek near Logan, Iowa.	05609600	129	Sed.	1963-69
Mule Creek near Malvern, Iowa.	05808000	10.6	Temp.	1963-69
David's Creek near Hamlin, Iowa.	05809000	26.0	Sed.	1963-69
East Nishnabotna River at Red Oak, Iowa.	05809500	894	Chem.	1972-75
Nishnabotna River above Hamburg, Iowa.	05810000	2,806	Sed.	1971-75
Platte River near Diagonal, Iowa.	05818750	217	Temp.	1958-69
Thompson River at Davis City, Iowa.	05898000	701	Sed.	1954-69
Weldon River near Leon, Iowa.	05898400	104	Temp.	1952-53; 1965-68
Chariton River near Chariton, Iowa.	05903400	182	Sed.	1952-68
Honey Creek near Russell, Iowa.	05903500	13.2	Temp.	1962-72
Chariton River near Rathbun, Iowa.	05903900	551	Sed.	1962-73

Type of record: Chem. (chemical quality); Temp. (water temperature); Sed. (sediment).

UPPER IOWA RIVER BASIN

35

05387500 UPPER IOWA RIVER AT DECORAH, IA

LOCATION.--Lat 43°18'15", long 91°47'48", in NE1/4 SW1/4 sec.16, T.9B N., R.8 W., Winneshiek County, Hydrologic Unit 07060002, on right bank 1,200 ft (366 m) upstream from bridge on U.S. Highway 52 (city route) in Decorah, 1,800 ft (487 m) downstream from Dry Run cutoff, and 3.0 mi (4.8 km) upstream from Trout Run.

DRAINAGE AREA.--511 mi² (1,323 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1951 to current year.

REVISED RECORDS.--VSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 850.00 ft (259.080 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are fair.

AVERAGE DISCHARGE.--26 years, 297 ft³/s (8.411 m³/s), 7.89 in/yr (200 mm/yr), 215,200 acre-ft/yr (265 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,200 ft³/s (572 m³/s) Mar. 27, 1961, gage height, 13.08 ft (3.987 m); minimum daily, 22 ft³/s (0.62 m³/s) Feb. 2-7, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum flood known, probably since at least 1913, occurred May 29, 1941, at site of former gaging station near Decorah, 4 mi (6.4 km) downstream, discharge, 28,500 ft³/s (807 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,010 ft³/s (56.9 m³/s) Feb. 24, gage height, 6.31 ft (1.923 m), no peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 38 ft³/s (1.08 m³/s) Jan. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	92	74	49	57	805	132	92	119	57	55	87
2	63	84	78	50	56	763	151	89	107	53	55	87
3	63	80	77	52	59	768	181	87	100	63	53	77
4	63	80	76	54	60	1280	230	206	92	67	52	76
5	63	80	67	55	58	795	210	222	132	59	52	69
6	63	80	66	55	56	415	185	181	129	57	52	65
7	63	80	80	56	57	459	167	196	92	196	52	63
8	68	84	69	58	60	668	154	167	84	89	64	61
9	69	78	72	60	64	467	144	144	77	66	63	59
10	70	82	68	60	67	336	135	132	75	57	63	57
11	70	76	70	61	70	333	129	122	72	51	64	53
12	70	70	74	61	72	376	122	116	70	57	61	53
13	73	80	84	62	75	330	116	110	70	60	61	53
14	78	90	84	61	77	288	113	105	66	48	59	52
15	82	86	94	60	78	242	110	113	63	50	61	52
16	82	84	108	58	81	212	107	107	63	48	63	50
17	80	80	105	55	84	189	105	107	66	141	63	55
18	84	77	100	47	87	177	102	102	66	132	61	53
19	84	79	97	40	88	162	102	97	61	94	61	53
20	86	80	95	38	88	153	102	97	57	102	61	61
21	86	77	84	47	90	142	107	97	57	94	61	57
22	84	72	81	58	110	134	107	107	55	77	61	61
23	90	77	79	61	300	126	141	102	61	68	61	59
24	90	57	75	62	1510	122	141	102	59	68	61	106
25	84	79	68	60	1360	120	125	105	61	72	59	119
26	82	79	60	55	939	130	116	97	61	68	59	92
27	80	79	55	52	987	138	107	94	61	66	59	85
28	80	82	50	58	847	150	105	89	59	68	63	83
29	84	94	49	61	---	160	100	119	55	64	70	91
30	84	90	48	60	---	152	94	135	59	61	66	90
31	84	---	48	58	---	146	---	119	---	59	75	---
TOTAL	2365	2408	2335	1724	7537	10738	3940	3758	2249	2302	1871	2078
MEAN	76.3	80.3	75.3	55.6	269	346	131	121	75.0	74.3	60.4	69.3
MAX	90	94	108	62	1510	1280	230	222	122	196	75	119
MIN	63	57	48	38	56	120	94	87	55	48	52	50
CFSM	.15	.16	.15	.11	.53	.68	.26	.24	.15	.15	.12	.14
IN.	.17	.18	.17	.13	.56	.78	.29	.27	.16	.17	.14	.15
AC-FT	4690	4789	4630	3420	14950	21300	7810	7450	4460	4570	3710	4120

CAL YR 1976 TOTAL 89269 MEAN 244 MAX 7130 MIN 48 CFSM .48 IN 6.50 AC-FT 177100
 WTR YR 1977 TOTAL 43305 MEAN 119 MAX 1510 MIN 38 CFSM .23 IN 3.15 AC-FT 85900

UPPER IOWA RIVER BASIN

05387500 UPPER IOWA RIVER AT DECORAH, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1963 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: October 1962 to September 1964, October 1965 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1962 to December 1967.

INSTRUMENTATION.--Temperature recorder since Apr. 12, 1967.

REMARKS.--No record Oct. 1-3.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 33.5°C July 5-6, 1977. minimum, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,700 mg/L May 26, 1965; minimum daily mean, 1 mg/L Oct. 21, 1965.

SEDIMENT LOADS: Maximum daily, 82,300 tons (56,500 tonnes) June 10, 1967; minimum daily, 0.1 ton (0.09 tonne) Oct. 21, 1965.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 33.5 July 1-6; minimum, 0.0°C on many days during winter period.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	---	---	7.0	4.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0
2	---	---	0.5	5.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	---	---	5.5	3.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	---	---	5.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	---	---	4.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	---	---	4.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	---	---	3.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	---	---	1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
9	---	---	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.5
10	---	---	2.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	5.5	2.0
11	---	---	1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	4.5
12	---	---	1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	5.5
13	---	---	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	5.0
14	14.0	9.5	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	5.0
15	11.5	8.5	1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	8.5	6.0
16	8.5	6.5	1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	4.5
17	9.0	5.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	4.5
18	6.5	5.0	1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	3.5
19	5.5	5.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	3.5
20	6.5	4.5	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	3.5
21	5.5	4.0	1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	4.0
22	6.0	3.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	2.0
23	6.5	4.5	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	8.5	4.0
24	6.0	5.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	4.0
25	6.0	4.5	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	10.5	4.5
26	5.5	4.5	1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	8.0
27	5.5	3.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	10.0	10.0
28	6.0	2.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	10.0	10.0
29	6.5	3.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	11.5	9.0
30	6.5	6.0	0.5	0.5	0.0	0.0	0.0	0.0	---	---	9.5	3.5
31	8.0	4.5	---	---	0.0	0.0	0.0	0.0	---	---	8.5	6.0
MONTH	14.0	2.0	8.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	11.5	0.0

WATER-QUALITY RECORDS

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

[illegible]

UPPER IOWA RIVER BASIN

05389250 UPPER IOWA RIVER NEAR DORCHESTER, IA

LOCATION.--Lat 43°25'18", long 91°30'31", in SW1/4 NW1/4 sec.1, T.99 N., R.6 W., Allamakee County, Hydrologic Unit 07060002, on right bank at upstream side of bridge on State Highway 76, 650 ft (198 m) upstream from Mineral Creek, 0.5 mi (0.8 km) upstream from Bear Creek, 3.5 mi (5.6 km) south of Dorchester, and 19.1 mi (29.1 km) upstream from mouth.

DRAINAGE AREA.--770 mi² (1,994 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1936 to June 1978 (gauge heights and discharge measurements only), July 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 660.00 ft (201.168 m) above mean sea level. Prior to Jan. 6, 1938, nonrecording gage on old bridge at site 0.2 mi (0.3 km) upstream at datum 5.91 ft (1.801 m) higher. Jan. 6, 1938, to Apr. 26, 1948, nonrecording gage at datum 80.00 ft (18.288 m) lower. Apr. 27, 1948 to August 1963, nonrecording gage on old bridge and August 1963 to June 1975 nonrecording gage on new bridge at same datum.

REMARKS.--Water-discharge record good except those for winter period, which are poor. Corps of Engineers gage-height telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,000 ft³/s (398 m³/s) Mar. 12, 1976, gage height, 17.67 ft (5.386 m); minimum daily, 79 ft³/s (2.24 m³/s) Dec. 31, 1976.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 30, 1941, reached a stage of 21.8 ft (6.64 m), from flood profile, discharge, 30,400 ft³/s (861 m³/s) on basis of slope-area determination of peak flow.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,110 ft³/s (116 m³/s) Feb. 24, gage height, 12.35 ft (3.764 m) at 0100 hours, no other peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 79 ft³/s (2.24 m³/s) Dec. 31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	136	139	122	82	92	228	228	159	159	126	116	147
2	136	140	120	66	94	211	255	155	154	108	113	166
3	132	137	118	88	56	211	287	150	142	119	110	169
4	132	134	118	90	99	596	327	172	135	142	109	161
5	134	134	114	92	96	795	364	255	150	118	109	158
6	126	134	104	92	91	677	337	294	159	106	104	145
7	129	133	104	93	91	583	308	255	167	184	107	135
8	128	130	107	95	96	928	278	262	142	352	114	129
9	129	130	108	95	104	987	258	227	128	336	174	127
10	131	115	108	102	108	647	247	205	125	231	136	120
11	131	123	108	100	112	468	233	189	122	163	119	116
12	132	106	110	100	116	572	217	177	117	126	113	113
13	133	103	111	99	130	558	208	173	115	122	110	115
14	132	138	120	99	126	459	199	162	113	118	108	111
15	120	152	120	100	126	404	205	152	111	115	106	106
16	128	146	120	96	130	352	190	165	113	125	120	106
17	127	165	121	95	145	310	183	164	114	480	123	107
18	126	130	122	94	142	289	160	160	117	1190	117	115
19	133	128	122	92	143	265	176	151	117	356	114	114
20	136	120	120	98	145	252	183	148	113	231	118	110
21	137	118	116	101	152	229	190	152	111	309	118	117
22	136	120	124	103	180	217	188	146	111	233	116	127
23	134	106	120	104	379	206	184	152	111	180	114	133
24	141	118	111	105	2380	195	215	153	109	167	114	242
25	141	120	108	105	1340	189	216	147	108	160	114	252
26	138	125	103	104	540	185	200	155	105	155	113	217
27	135	106	91	85	356	197	187	145	102	144	116	170
28	134	91	80	102	300	205	177	134	102	139	126	161
29	135	120	80	101	---	234	169	126	100	138	130	168
30	140	116	81	99	---	243	154	146	119	131	134	174
31	140	---	79	96	---	229	---	163	---	123	140	---
TOTAL	4143	3778	3390	2998	7900	12139	6753	5424	3691	6731	3675	4331
MEAN	134	126	109	96.7	252	382	228	175	123	217	119	144
MAX	141	164	124	106	2360	987	364	294	167	1190	174	252
MIN	126	91	79	82	91	185	164	126	100	106	104	106
CFS/M	.77	.16	.14	.13	.37	.51	.29	.23	.16	.28	.16	.19
IN.	.20	.16	.16	.14	.20	.65	.33	.26	.18	.33	.18	.21
AC-FT	8220	7490	6720	5950	15670	24080	13390	10760	7320	13350	7290	8550

CAL YR 1976 TOTAL 143897 MEAN 393 MAX 9470 MIN 79 CFSM .51 IN 6.95 AC-FT 285400
WTR YR 1977 TOTAL 64953 MEAN 178 MAX 2380 MIN 79 CFSM .23 IN 3.14 AC-FT 128800

05388250 UPPER IOWA RIVER NEAR DORCHESTER, IOWA--Continued.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--July 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1975 to current year.

SEDIMENT RECORDS: July 1975 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 635 micromhos Aug. 5, 1975; minimum daily, 205 micromhos July 21, 1977.

SEDIMENT CONCENTRATION: Maximum daily mean, 4,100 mg/L Mar. 27, 1976; minimum daily mean, 5 mg/L Nov. 17, 1976, Jan. 17, 1977.

SEDIMENT LOADS: Maximum daily, 105,000 tons (95,300 tonnes) Mar. 12, 1976; minimum daily, 1.3 tons (1.2 tonnes) Jan. 17, 1977.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 600 micromhos Jan. 13; minimum daily, 205 micromhos July 21.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,690 mg/L July 18; minimum daily mean, 5 mg/L Nov. 17, Jan. 17.

SEDIMENT LOADS: Maximum daily, 10,700 tons (9,710 tonnes) Feb. 24; minimum daily, 1.3 tons (1.2 tonnes) Jan. 17.

WATER QUALITY DATA, JULY 1976 TO SEPTEMBER 1977

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	400	390	380	470	460	400	430	400	370	380	320	370
2	370	310	380	520	440	420	420	440	360	360	320	400
3	370	370	380	510	460	410	440	420	370	380	330	350
4	370	440	360	470	370	310	440	420	360	340	330	390
5	410	410	375	500	380	320	380	420	380	330	310	380
6	400	410	410	510	450	340	450	440	380	320	320	400
7	405	380	380	530	380	300	430	450	390	310	320	400
8	400	350	420	580	390	260	400	400	390	350	---	390
9	390	410	380	480	410	---	450	410	390	330	330	390
10	390	420	350	530	380	310	450	450	400	330	290	---
11	400	410	370	560	390	320	450	400	400	390	340	370
12	390	420	350	550	410	300	450	400	400	390	340	370
13	370	400	360	600	480	360	450	400	400	325	340	370
14	380	420	360	460	500	320	420	430	400	320	340	370
15	370	380	360	450	460	400	420	450	400	360	340	390
16	360	450	370	500	480	400	430	400	380	360	360	360
17	380	370	380	500	500	380	430	420	380	210	360	370
18	380	390	350	530	380	340	420	410	380	245	340	360
19	410	360	390	470	380	340	420	410	390	280	360	360
20	430	380	390	375	470	340	420	410	380	270	360	360
21	390	370	450	380	460	360	420	410	380	205	360	360
22	440	365	450	340	460	330	420	410	380	330	360	420
23	380	360	440	380	460	350	400	410	400	330	390	420
24	420	340	440	310	340	320	390	410	400	330	390	430
25	420	335	440	340	300	340	390	380	400	310	375	440
26	440	340	420	440	360	320	390	380	400	320	400	440
27	340	350	420	370	390	310	370	380	400	325	390	460
28	390	380	420	490	390	305	400	420	390	315	360	360
29	420	375	470	420	---	360	420	360	360	320	400	380
30	410	360	410	440	---	320	430	360	380	320	340	420
31	320	---	440	430	---	330	---	370	---	320	360	---

UPPER IOWA RIVER BASIN
05388250 UPPER IOWA RIVER NEAR DORCHESTER, IOWA--Continued.
WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH			
1	16	5.9	14	5.3	12	4.0	34	7.5	22	5.5	32	20		
2	24	0.8	13	4.9	10	3.2	40	9.3	16	4.6	13	7.5		
3	32	11	15	5.5	13	4.1	20	4.8	20	5.2	17	9.6		
4	29	10	13	4.7	17	5.4	50	12	20	5.3	376	603		
5	27	9.8	18	6.5	30	9.2	20	5.0	15	2.9	268	575		
6	14	5.1	17	6.2	25	7.0	27	6.7	16	3.9	82	150		
7	23	8.0	16	5.7	28	7.9	16	4.0	15	2.7	73	115		
8	32	11	15	5.3	71	21	6	1.6	22	5.7	228	556		
9	49	17	9	3.2	55	16	14	3.7	18	5.1	377	1003		
10	26	9.2	9	2.8	26	7.6	20	5.5	17	5.0	234	409		
11	39	14	6	2.0	15	4.4	22	5.9	25	7.6	68	90		
12	28	10	8	2.3	12	3.6	27	7.3	37	12	75	116		
13	21	7.5	10	2.8	12	3.6	13	3.5	19	6.7	114	172		
14	18	6.4	13	4.8	23	7.5	28	7.5	8	2.7	69	66		
15	26	9.1	16	6.6	55	18	20	5.4	18	6.1	70	76		
16	21	7.3	11	4.3	34	11	7	1.8	8	2.8	67	64		
17	19	6.5	5	2.2	27	8.8	5	1.3	9	3.5	58	49		
18	19	6.5	12	4.2	21	6.9	15	3.8	25	9.6	28	22		
19	14	5.0	8	2.8	19	6.3	16	4.0	14	5.4	42	30		
20	11	4.0	9	2.9	22	7.1	13	3.4	13	5.1	67	46		
21	12	4.4	12	3.8	22	6.9	10	2.7	14	5.7	26	16		
22	14	5.1	16	5.2	22	7.4	12	3.3	18	8.7	34	20		
23	13	4.7	14	4.0	20	6.5	9	2.5	170	170	38	21		
24	12	4.6	11	3.5	24	7.2	13	3.7	1650	10700	32	17		
25	12	4.6	6	1.9	43	13	15	4.3	365	1390	35	18		
26	12	4.5	11	3.7	27	7.5	33	9.3	350	510	50	25		
27	15	5.5	8	2.3	22	5.4	25	5.7	146	140	55	29		
28	20	7.2	19	4.7	21	4.5	27	7.4	88	71	50	28		
29	14	5.1	15	4.9	22	4.8	17	4.6	---	---	34	21		
30	14	5.3	10	3.1	26	5.7	12	3.2	---	---	31	20		
31	16	6.0	---	---	30	6.4	20	5.2	---	---	50	31		
TOTAL	---	229.1	---	122.1	---	237.9	---	155.9	---	13104.8	---	4482.1		

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER				
1	15	9.2	27	12	47	20	60	20	104	33	38	15		
2	14	9.6	21	8.8	66	27	46	13	105	32	39	17		
3	22	17	27	11	62	24	60	19	87	26	39	18		
4	15	13	24	11	42	15	58	22	132	39	39	17		
5	18	18	43	33	79	32	63	20	152	45	27	12		
6	15	14	64	51	44	19	75	21	349	98	40	16		
7	21	17	87	60	60	27	100	54	278	80	37	13		
8	13	9.8	135	95	33	13	149	142	263	81	50	17		
9	32	22	58	36	44	15	145	132	110	52	35	12		
10	27	18	80	44	36	12	119	74	116	43	36	12		
11	24	15	102	52	47	15	101	44	70	22	38	12		
12	28	16	129	62	33	10	105	36	54	16	35	11		
13	23	13	132	62	49	15	88	29	53	16	30	9.3		
14	22	12	74	32	31	9.5	179	57	78	23	26	7.8		
15	24	13	62	25	56	17	850	264	62	18	40	11		
16	11	5.6	60	27	56	17	680	297	57	18	27	7.7		
17	23	11	58	26	40	12	2530	3280	76	25	18	5.2		
18	26	13	72	31	57	18	2690	8640	61	19	22	6.6		
19	26	12	27	11	45	14	680	654	48	15	24	7.4		
20	52	26	42	17	40	12	850	530	49	16	28	8.3		
21	47	24	42	17	61	18	900	751	40	13	48	15		
22	46	23	79	31	48	14	460	289	45	14	72	25		
23	25	12	40	16	76	23	300	146	44	14	118	42		
24	29	17	52	21	40	12	264	119	31	9.5	211	138		
25	23	13	59	23	51	15	175	76	50	15	164	112		
26	26	14	53	22	28	7.9	172	72	25	7.6	96	56		
27	29	15	55	22	49	13	174	68	39	12	36	17		
28	27	13	60	22	46	13	102	68	20	6.8	32	14		
29	29	13	27	13	36	9.7	161	60	57	20	15	6.8		
30	49	21	54	21	54	17	196	69	63	23	26	12		
31	---	---	53	23	---	---	123	41	68	26	---	---		
TOTAL	---	449.2	---	937.8	---	486.1	---	16107	---	877.9	---	672.3		

TOTAL LOAD FOR YEAR: 37863.2 TONS.

UPPER IOWA RIVER BASIN
05388250 UPPER IOWA RIVER NEAR DORCHESTER, IOWA--Continued.

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WATER-QUALITY RECORDS
WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	NUMBER OF SAM- PLING POINTS (00063)	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	BED MAT. SIEVE DIAM. % FINER THAN (80164)	BED MAT. SIEVE DIAM. % FINER THAN (80165)	BED MAT. SIEVE DIAM. % FINER THAN (80166)
OCT 07...	1130	9.0	5	135	1	2	9
NOV 18...	1100	1.5	5	139	1	1	8
MAR 31...	1000	0.0	5	226	--	0	2
APR 27...	1020	15.0	4	168	2	2	5
MAY 25...	1015	21.5	3	140	1	4	9
AUG 25...	1000	17.5	5	115	3	4	9
SEP 28...	1330	14.0	4	165	0	1	4

DATE	BED MAT. SIEVE DIAM. % FINER THAN (80167)	BED MAT. SIEVE DIAM. % FINER THAN (80168)	BED MAT. SIEVE DIAM. % FINER THAN (80169)	BED MAT. SIEVE DIAM. % FINER THAN (80170)	BED MAT. SIEVE DIAM. % FINER THAN (80171)	BED MAT. SIEVE DIAM. % FINER THAN (80172)	BED MAT. SIEVE DIAM. % FINER THAN (80173)
OCT 07...	58	75	80	63	89	97	100
NOV 18...	60	75	80	83	89	96	100
MAR 31...	63	91	97	96	99	99	100
APR 27...	63	92	98	99	100	--	--
MAY 25...	66	81	85	88	92	98	100
AUG 25...	69	92	96	97	98	100	--
SEP 28...	59	80	83	85	88	90	100

MISSISSIPPI RIVER MAIN STEM

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA

LOCATION.--Lat 43°01'29", long 91°10'21", in SE1/4 SE1/4 sec.22, T.95 N., R.3 W., Clayton County, Hydrologic Unit 07080001, on right bank in city park at east end of Main Street in McGregor, 2.6 mi (4.2 km) upstream from Wisconsin River, 4.3 mi (6.9 km) downstream from Yellow River, and at mile 633.4 (1,019.1 km) upstream from Ohio River.

DRAINAGE AREA.--67,500 mi² (174,800 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1936 to current year.

REVISED RECORDS.--WRD IA-75-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 605.30 ft (184.495 m) above mean sea level, adjustment of 1912. Prior to June 1, 1937, and since June 2, 1939, auxiliary water-stage recorder; June 1, 1937 to June 1, 1939, auxiliary nonrecording gage 14.1 mi (22.7 km) upstream in tailwater of dam 9, at datum 6.30 ft (1.615 m) lower.

REMARKS.--Records good except those for winter period, which are fair. Stage-discharge relation affected by backwater from Wisconsin River and Lock and Dam No. 10. Minor flow regulation caused by navigation dams.

COOPERATION.--Auxiliary gage-height and discharge data at Lock and Dam No. 9 furnished by Corps of Engineers.

AVERAGE DISCHARGE.--41 years. 33,320 ft³/s (943.6 m³/s), 6.70 in/yr (170 mm/yr), 24,140,000 acre-ft/yr (29,800 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 276,000 ft³/s (7,620 m³/s) Apr. 24, 1965; maximum gage height, 25.38 ft (7.736 m) Apr. 24, 1965; minimum daily discharge, 6,200 ft³/s (176 m³/s) Dec. 9, 1936; minimum gage height, -0.86 ft (-0.262 m) Aug. 18, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1828, that of Apr. 24, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 42,000 ft³/s (1,190 m³/s) Sept. 30; maximum gage height, 8.61 ft (2.624 m) Sept. 30; minimum daily discharge, 7,700 ft³/s (218 m³/s) Dec. 1; minimum gage height, 5.59 ft (1.704 m) Nov. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
1	8400	14400	7700	9600	8700	15000	30100	29000	18800	22200	14900	27000	
2	9700	13100	7900	9500	8600	15000	30500	23500	18700	21600	14200	31600	
3	9600	12200	8000	9600	8600	15000	31800	21700	19600	21400	13700	36000	
4	9700	12500	8000	9200	8100	15100	32200	19200	18900	21000	12800	37800	
5	9800	11500	8000	9100	8000	15200	35500	18200	19200	21400	12700	37800	
6	11300	10300	7900	9000	8000	15100	36200	17600	22200	21500	13200	37600	
7	12300	9500	8000	8900	8100	15100	35800	17300	23700	24700	13900	36500	
8	12200	9200	8100	8700	8200	15300	32900	17500	25600	27800	15000	35700	
9	11300	9000	8000	8800	8700	15600	26600	17800	26600	28500	16000	35300	
10	11200	10100	8000	9000	9000	17500	24600	18200	23900	28100	16200	34100	
11	11200	10300	8200	9200	9300	21200	21100	17400	19700	27500	16900	32800	
12	11400	11200	8200	9300	9500	25300	19300	16300	16100	25200	16700	32200	
13	11800	12300	9200	9700	9700	29400	19000	16300	13100	22400	13000	32100	
14	12300	12800	9500	10200	10000	32600	19500	14800	12700	19700	11200	32300	
15	12200	11700	10600	10800	10100	34800	19400	14400	12800	18200	9550	31700	
16	12100	12200	11400	10400	10200	36300	20500	14300	14900	17700	10500	30800	
17	12200	11600	11500	10100	10400	36300	22600	15100	17400	16500	9500	29300	
18	12100	10900	11600	9800	10500	36700	25300	17300	20600	18900	9550	27100	
19	11100	10300	10900	9600	10500	36300	27600	18700	22400	20900	9550	25900	
20	12100	11000	11200	9200	10600	35000	28900	20100	22500	17000	10100	24200	
21	11900	11500	11600	8800	10600	33500	31700	22900	21800	13100	10500	23100	
22	12600	10900	11800	8700	11200	31600	34300	24100	21400	11600	11500	22400	
23	11700	11100	12300	8700	12700	27700	35300	21600	21200	12900	11700	22600	
24	10800	11900	12000	8700	14200	23200	35000	19200	19700	14500	12400	24700	
25	11800	10800	11600	8600	15500	22200	35100	18500	19300	16100	13200	26800	
26	12300	10000	11000	8700	15200	23900	33700	17400	19500	16000	13200	29700	
27	13000	9740	10500	8800	15100	25300	31400	16000	19500	14900	14600	33600	
28	15000	10600	10400	8900	15000	28300	31200	14900	21100	13600	13100	37800	
29	13800	9000	9500	9300	---	30200	31700	14800	22000	13100	13800	40400	
30	13500	8200	9500	9000	---	30200	31200	15100	21700	13600	16100	42000	
31	13600	---	9600	8800	---	30700	---	17100	---	13800	19800	---	
TOTAL	364000	329840	302200	285700	294300	784600	872900	565300	596600	595400	408050	950900	
MEAN	11740	10990	9748	9248	10610	25310	29100	18240	19390	19210	13160	31700	
MAX	15000	14400	12300	10800	15500	36700	36200	29000	26600	28500	19800	42000	
MIN	8400	8200	7700	8600	8000	15000	15000	14300	12700	11600	9500	22400	
CFSM	.17	.16	.14	.14	.16	.38	.43	.27	.20	.29	.20	.47	
IN.	.20	.18	.17	.16	.16	.43	.46	.31	.33	.33	.22	.52	
AC-FT	722000	654200	599400	568700	583700	1556000	1731000	1121000	1183000	1101000	809400	1886000	
CAL YR 1976 TOTAL	9324740	MEAN	25480	MAX	125000	MIN	7700	CFSM	.38	IN	5.14	AC-FT	18500000
WTR YR 1977 TOTAL	6350790	MEAN	17400	MAX	42000	MIN	7700	CFSM	.26	IN	3.50	AC-FT	12600000

WATER-QUALITY RECORDS

PERIOD OF RECORD.--July 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1976 to current year.

WATER TEMPERATURES: July 1975 to current year.

WATER TEMPERATURES: July 1975 to current year.
SUSPENDED-SEDIMENT DISCHARGE: July 1975 to current year.

REMARKS.--Records of specific conductance are obtained from sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATION: Maximum daily mean, 192 mg/L Mar. 16, 1976; minimum daily mean, 1 mg/L Dec. 23-25, 1976.

SEDIMENT LOADS: Maximum daily, 37,700 tons (34,200 tonnes) Mar. 16, 1976; minimum daily, 31 tons (28 tonnes) Dec. 25, 1976.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATION: Maximum daily mean, 184 mg/L June 10; minimum daily mean, 1 mg/L Dec. 23-25.

SEDIMENT LOADS: Maximum daily, 11,900 tons (10,800 tonnes) June 10; minimum daily, 31 tons (28 tonnes) Dec. 25.

WATER QUALITY DATA, OCTOBER 1976 TO SEPTEMBER 1977

SPECIFIC CONDUCTANCE (MICRONHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

[illegible]

MISSISSIPPI RIVER MAIN STEM

05309500 MISSISSIPPI RIVER AT MCGREGOR, IOWA--Continued

WATER-QUALITY RECORDS

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18.5	---	---	0.0	---	0.0	---	---	---	24.0	---	23.0
2	---	---	---	---	0.0	---	---	18.0	22.0	---	---	---
3	---	---	---	---	---	---	---	---	---	---	26.0	---
4	---	5.0	---	---	---	---	---	---	---	---	---	---
5	17.0	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	0.0	---	---	---	---	---	24.0
7	---	---	---	---	---	---	---	---	---	30.0	---	---
8	13.0	---	---	---	0.0	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	28.5	---	---
10	---	---	0.0	---	---	---	---	19.0	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	24.0	---
13	---	---	---	---	---	---	17.0	---	---	---	---	---
14	14.0	---	---	0.0	---	---	---	---	---	---	---	---
15	---	---	---	---	0.0	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	26.0	---	---	---
17	---	---	---	---	---	---	---	---	---	---	23.5	---
18	---	---	0.0	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	19.0	---	---	---	---	---
20	8.0	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	0.0	0.0	---	---	---	---	---	---	---
22	---	---	0.0	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	23.0	---	---	---	---
25	---	---	---	0.0	0.0	---	---	---	---	---	---	---
26	---	---	---	0.0	---	---	16.0	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	29.0	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	28.0	---	---	---
31	---	---	---	---	---	---	---	---	---	24.0	---	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	9	204	63	2450	14	291	3	78	40	940	9	364
2	9	236	53	1870	14	299	2	51	60	1390	8	324
3	12	311	43	1420	12	259	1	26	64	1490	7	283
4	18	471	34	1150	9	194	1	26	64	1400	8	326
5	26	668	30	931	6	130	6	147	61	1320	18	687
6	30	915	26	723	5	107	12	292	47	1020	28	1140
7	28	930	24	616	5	108	11	264	30	686	33	1350
8	22	725	26	646	5	109	11	258	12	266	38	1450
9	19	580	31	753	5	108	10	238	9	211	42	1770
10	19	575	37	1010	4	86	9	219	8	194	60	2840
11	20	605	46	1280	3	66	6	198	5	151	68	3090
12	27	831	55	1650	3	66	7	176	4	103	42	2370
13	35	1120	63	2090	2	50	7	183	3	79	25	1980
14	44	1460	67	2320	2	51	7	193	4	108	25	2200
15	36	1190	66	2000	3	86	8	233	4	109	31	2910
16	28	915	65	2140	6	188	9	253	5	138	51	6000
17	26	856	63	1970	6	248	13	385	4	112	60	6800
18	24	784	60	1770	10	313	18	423	3	86	68	6740
19	22	659	57	1590	10	294	21	544	2	57	55	8390
20	19	621	54	1600	8	242	32	795	2	57	49	4630
21	20	643	51	1580	6	168	34	808	3	86	33	2980
22	20	680	45	1320	4	127	42	987	3	91	24	2050
23	21	663	37	1110	1	33	34	799	21	720	24	1790
24	20	593	33	1060	1	32	24	564	33	1270	22	1380
25	10	573	30	875	1	31	16	372	11	460	23	1380
26	20	664	28	756	2	69	13	305	7	287	34	2190
27	23	807	25	687	4	113	10	238	8	326	44	2010
28	20	1130	23	650	4	112	7	168	9	364	46	3510
29	42	1560	10	437	4	107	5	151	---	---	40	3260
30	55	2300	13	268	4	104	8	194	---	---	30	2460
31	67	2460	---	---	4	104	22	523	---	---	28	2980
TOTAL	---	26479	---	38810	---	4332	---	10061	---	13490	---	71974

MISSISSIPPI RIVER MAIN STEM

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05389800 MISSISSIPPI RIVER AT MCGREGOR, IOWA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	47	3820	35	2740	12	609	38	2280	40	1610	45	3280
2	56	4610	33	2090	14	707	42	2450	49	1880	80	6830
3	61	5240	32	1870	15	794	43	2480	33	1220	94	9140
4	62	5560	30	1560	13	653	39	2210	18	622	85	6680
5	66	6330	29	1430	15	778	33	1910	14	480	64	6530
6	64	6260	31	1470	40	2400	33	1920	15	535	37	3760
7	56	5410	30	1400	52	3330	50	3330	22	826	29	2860
8	45	4000	28	1320	90	6220	57	4280	35	1420	30	2890
9	42	3240	26	1250	118	8470	42	3230	43	1860	28	2670
10	40	2660	22	1080	184	11900	34	2580	43	1880	23	2120
11	40	2280	20	940	38	2020	30	2230	38	1730	19	1680
12	39	2030	20	880	16	782	28	1910	31	1400	19	1650
13	43	2210	21	868	11	369	28	1690	25	877	22	1910
14	52	2740	19	759	11	377	27	1440	19	675	29	2530
15	61	3200	17	661	15	518	24	1180	17	438	28	3250
16	66	3600	16	618	46	1850	23	1100	47	1330	46	3830
17	64	3910	18	734	61	2870	33	1470	37	949	48	3800
18	48	3280	30	1400	54	3000	61	3110	32	825	47	3440
19	33	2450	57	2880	58	3510	49	2770	30	774	43	3010
20	31	2420	86	4670	50	3040	34	1560	33	900	37	2420
21	52	4480	107	6620	37	2180	23	814	35	992	29	1810
22	68	6300	107	6960	28	1620	21	658	32	994	22	1940
23	65	6200	94	5480	21	1200	29	1010	25	790	33	2010
24	61	5760	72	3730	15	798	45	1760	33	1100	35	2330
25	54	5120	48	2400	13	677	55	2390	43	1530	36	2600
26	38	3460	29	1360	14	737	53	2290	46	1640	38	3050
27	38	3220	22	950	17	895	46	1810	44	1730	29	3540
28	41	3450	22	885	23	1310	33	1210	39	1260	43	4290
29	41	3510	26	1040	33	1960	22	778	26	931	49	5540
30	39	3290	26	1060	38	2230	21	771	26	1060	56	6350
31	---	---	19	877	---	---	27	1010	39	2000	---	---
TOTAL	---	120010	---	61982	---	67834	---	59631	---	36358	---	109640

TOTAL LOAD FOR YEAR: 627551 TONS.

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	NUMBER OF SAM- PLING POINTS (00063)	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	BED	BED	BED	BED	BED	BED	
					MAT. FALL DIAM. % FINER THAN .004 MM (80157)	MAT. FALL DIAM. % FINER THAN .062 MM (80158)	MAT. FALL DIAM. % FINER THAN .125 MM (80159)	MAT. FALL DIAM. % FINER THAN .250 MM (80160)	MAT. FALL DIAM. % FINER THAN .500 MM (80161)	MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	
NOV 04...	1320	5.0	6	12200	--	--	--	--	--	--	
MAR 15...	1030	--	6	38200	--	--	--	--	--	--	
APR 19...	1630	19.0	6	29100	--	--	--	--	--	--	
MAY 17...	1500	--	6	17900	--	--	--	--	--	--	
JUN 15...	1200	23.0	6	11900	--	--	--	--	--	--	
JUL 09...	1330	28.5	6	21900	12	30	32	58	92	96	
AUG 18...	1730	--	6	9000	--	--	--	--	--	--	
SEP 21...	1110	--	6	23300	--	--	--	--	--	--	
DATE		BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
NOV 04...	10	14	36	83	75	87	95	98	100	--	--
MAR 15...	15	21	45	64	74	86	90	91	92	100	--
APR 19...	13	16	41	64	77	88	96	99	100	--	--
MAY 17...	11	15	35	74	86	93	96	96	98	100	--
JUN 15...	22	28	45	73	85	95	100	--	--	--	--
JUL 09...	--	--	--	--	--	96	96	100	--	--	--
AUG 18...	15	22	44	74	87	97	98	99	100	--	--
SEP 21...	6	10	39	89	96	98	99	100	--	--	--

TURKEY RIVER BASIN

05412500 TURKEY RIVER AT GARNER, IA

LOCATION.--Lat 42°44'24", long 91°15'42", in SE1/4 NW1/4 sec.36, T.92 N., R.4 W., Clayton County, Hydrologic Unit 07060004, on left bank 10 ft (3 m) downstream from bridge on county highway C43, 800 ft (244 m) upstream from Wayman Creek, 1,000 ft (305 m) southeast of Garner, 2,000 ft (610 m) downstream from Elk Creek, 1 mi (1.6 km) downstream from Volga River, and 19.8 mi (31.9 km) upstream from mouth.

DRAINAGE AREA.--1,545 mi² (4,002 km²).

PERIOD OF RECORD.--August 1913 to November 1916, May 1919 to September 1927, April 1929 to September 1930, October 1932 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1922-25 (H), 1927 (H). WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 534.46 ft (193.383 m) above mean sea level. Prior to Feb. 7, 1935, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--57 years (1913-16, 1919-27, 1929-30, 1932-77), 895 ft³/s (25.35 m³/s), 7.87 in/yr (200 mm/yr), 648,400 acre-ft/yr (799 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,300 ft³/s (915 m³/s) Feb. 23, 1922, gage height, 28.06 ft (8.553 m), from floodmark; minimum daily, 49 ft³/s (1.39 m³/s) Jan. 28, 29, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1890, that of Feb. 23, 1922.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,320 ft³/s (235 m³/s) Aug. 16, gage height, 15.52 ft (4.730 m) at 1200 hours, no other peak above base of 8,000 ft³/s (227 m³/s); minimum daily, 70 ft³/s (1.98 m³/s) Dec. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	148	190	110	112	94	495	402	250	221	130	254	626
2	142	188	114	117	92	450	455	246	206	137	245	554
3	142	182	98	111	95	646	550	242	193	145	255	491
4	147	170	94	91	93	1960	580	382	181	165	225	461
5	190	174	84	85	92	1180	634	386	182	142	222	438
6	182	162	94	85	88	626	626	354	170	144	216	405
7	163	138	60	86	89	670	590	354	162	190	234	375
8	150	94	76	79	92	724	535	330	162	241	536	350
9	152	150	85	74	99	680	490	305	150	229	1090	331
10	155	130	89	79	118	778	455	298	146	208	500	310
11	150	110	80	64	153	802	410	282	158	186	352	289
12	150	94	86	79	370	1340	334	254	150	209	285	279
13	149	90	90	78	355	1230	330	226	146	221	248	262
14	143	94	88	78	450	946	306	214	138	194	224	273
15	140	110	96	82	415	730	346	214	130	150	205	262
16	134	182	98	86	350	590	390	194	130	169	3410	234
17	139	254	102	82	335	495	310	784	126	566	1890	269
18	134	258	104	80	378	465	298	378	130	1620	930	278
19	155	242	105	82	352	415	282	310	130	958	740	277
20	164	174	105	72	333	390	306	302	130	440	820	272
21	166	158	70	85	329	374	366	378	122	850	730	258
22	166	154	85	87	480	346	386	270	118	510	625	257
23	158	182	93	89	4000	338	356	242	114	460	555	260
24	178	222	88	92	3760	306	326	230	116	585	500	543
25	194	250	98	95	1650	302	314	222	132	525	450	555
26	188	258	100	116	958	290	314	207	118	415	1680	654
27	186	226	100	100	670	306	298	202	99	366	1130	636
28	178	178	92	94	540	334	290	197	90	342	843	580
29	174	134	73	89	---	440	266	192	86	327	801	552
30	186	122	120	87	---	460	258	191	146	536	696	556
31	202	---	115	91	---	445	---	234	---	297	677	---
TOTAL	5015	5070	2912	2747	16844	19953	11807	8071	4290	11465	21568	11995
MEAN	162	169	93.9	88.6	504	644	394	266	143	370	696	400
MAX	202	250	120	117	4000	1960	634	704	221	1620	3410	555
MIN	124	90	70	72	88	290	258	191	66	137	205	234
CFSM	.11	.11	.06	.06	.39	.62	.26	.19	.09	.24	.45	.26
IN.	.12	.12	.07	.07	.41	.46	.29	.21	.10	.20	.52	.29
AC-FT	9950	10060	5780	5450	33410	39500	23420	17600	8510	22740	42700	23700

CAL YR 1976 TOTAL 245142 MEAN 670 MAX 13900 MIN 70 CFSM .43 IN 5.90 AC-FT 486200
WTR YR 1977 TOTAL 122537 MEAN 336 MAX 4000 MIN 70 CFSM .22 IN 2.95 AC-FT 243100

LITTLE MAQUOKETA RIVER BASIN

47

08414500 LITTLE MAQUOKETA RIVER NEAR DURANGO, IA

LOCATION.--Lat 42°33'18", long 90°44'48", in NW1/4 NE1/4 sec.8, T.89 N., R.2 E., Dubuque County, Hydrologic Unit 07080003, on left bank 10 ft (3 m) upstream from bridge on county highway, 300 ft (91 m) upstream from Cloie Branch, 1.7 mi (2.7 km) east of Durango, 5.6 mi (9.0 km) northwest of court house at Dubuque, and 6.4 mi (10.3 km) upstream from mouth.

DRAINAGE AREA.--130 mi² (337 km²).

PERIOD OF RECORD.--October 1934 to current year.

REVISED RECORDS.--WSP 1908: 1935-36, 1939 (M), 1940, 1943 (M), 1946, 1948, WRD IA-76-01: 1975.

GAGE.--Water-stage recorder. Datum of gage is 812.03 ft (198.547 m) above mean sea level. Prior to Jan. 5, 1939, nonrecording gage at same site and datum.

REMARKS.--Records excellent except those for winter period, which are good. Several observations of water temperature were made during the year.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--43 years, 88.7 ft³/s (2.427 m³/s), 8.98 in/yr (227 mm/yr), 82,090 acre-ft/yr (76.6 km³/yr); median of yearly mean discharges, 73 ft³/s (2.07 m³/s), 7.6 in/yr (193 mm/yr), 82,900 acre-ft/yr (86.2 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,000 ft³/s (1,130 m³/s) Aug. 2, 1972, gage height, 23.13 ft (7.050 m) in gage well, 23.8 ft (7.25 m), from floodmarks, on basis of slope-area measurement of peak flow; minimum daily, 5 ft³/s (142 dm³/s) July 12, 13, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 15, 1925, reached a stage of about 22.1 ft (6.74 m), discharge, about 29,000 ft³/s (821 m³/s), computed by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,700 ft³/s (76.5 m³/s) Feb. 23, gage height, 10.29 ft (3.138 m) no peak above base of 3,000 ft³/s (85.0 m³/s); minimum daily, 6.8 ft³/s (0.193 m³/s) Jan. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	23	11	6.8	7.8	34	36	18	15	24	14	27
2	24	20	11	6.9	7.8	33	42	18	15	15	58	22
3	26	18	11	7.0	7.8	60	39	18	15	13	42	20
4	27	18	12	7.2	7.8	130	43	33	15	14	18	21
5	38	18	12	8.0	7.8	49	64	56	14	13	189	20
6	34	18	12	9.0	7.8	38	45	33	14	12	27	19
7	18	18	12	11	7.8	38	38	26	14	12	18	19
8	17	18	12	9.8	7.8	41	31	22	15	12	199	18
9	17	18	13	8.6	8.2	55	28	21	15	12	38	18
10	17	19	12	9.2	8.8	48	26	21	15	11	25	17
11	17	18	12	9.3	19	53	23	20	15	11	19	18
12	17	18	11	9.4	130	125	22	18	16	11	17	20
13	17	19	11	9.4	72	66	22	17	15	11	17	21
14	17	19	12	9.4	33	49	21	16	15	11	16	21
15	17	18	14	9.3	23	43	21	15	14	11	15	21
16	17	18	16	9.3	20	35	20	15	13	14	36	23
17	18	16	17	9.3	15	33	19	15	13	839	27	28
18	18	16	17	9.3	14	33	19	15	13	558	19	35
19	21	17	17	9.4	13	33	18	15	13	69	17	33
20	22	16	16	8.4	13	32	20	84	13	35	31	27
21	22	17	13	7.6	13	32	30	91	12	40	29	25
22	21	15	11	7.6	13	32	36	33	13	29	32	25
23	22	14	12	7.5	1320	32	27	29	13	21	23	40
24	23	15	11	7.4	279	32	22	23	13	23	20	181
25	22	17	12	7.6	56	31	21	21	16	25	19	55
26	19	18	14	7.6	46	31	21	19	14	19	20	37
27	19	16	15	7.8	38	44	20	17	13	17	32	31
28	19	13	13	7.8	35	59	20	16	12	15	35	29
29	20	11	10	7.8	---	106	20	15	12	15	39	28
30	22	10	8.2	7.8	---	62	20	15	12	15	25	27
31	27	---	7.1	7.8	---	43	---	15	---	14	24	---
TOTAL	661	509	387.3	260.2	2231.4	1522	832	790	430	1942	1140	926
MEAN	21.3	17.0	12.5	8.39	79.7	49.1	27.7	25.5	14.3	62.6	36.8	30.9
MAX	38	23	17	11	1320	130	64	91	25	839	199	181
MIN	17	10	7.1	6.8	7.8	31	18	15	12	11	14	17
CFSM	.16	.13	.10	.07	.61	.38	.21	.20	.11	.48	.28	.24
IN.	.19	.15	.11	.07	.64	.44	.24	.23	.12	.86	.33	.26
AC-FT	1310	1010	758	516	4430	3020	1650	1570	853	3650	2260	1840

CAL YR 1976 TOTAL 20314.3 MEAN 55.5 MAX 1400 MIN 7.1 CFSM .43 IN 5.81 AC-FT 40290
WTR YR 1977 TOTAL 11630.9 MEAN 31.9 MAX 1320 MIN 6.8 CFSM .25 IN 3.33 AC-FT 23070

MAQUOKETA RIVER BASIN

05418500 MAQUOKETA RIVER NEAR MAQUOKETA, IA

LOCATION.--Lat 42°05'05", long 90°38'04", in SW1/4 NE1/4 sec.17, T.84 N., R.3 E., Jackson County, Hydrologic Unit 07060008, on right bank 500 ft (152 m) upstream from bridge on State Highway 62, 1,200 ft (366 m) upstream from Prairie Creek, 2.0 mi (3.2 km) northeast of Maquoketa, 2.2 mi (3.5 km) downstream from North Fork, and 25.7 mi (41.3 km) upstream from mouth.

DRAINAGE AREA.--1,553 mi² (4,022 km²).

PERIOD OF RECORD.--September 1913 to current year. Prior to October 1939, published as "below North Fork near Maquoketa". Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 405: 1914. WSP 1438: Drainage area. WSP 1508: 1914-17, 1919-25, 1926 (M), 1929, 1933-34 (M), 1943.

GAGE.--Water-stage recorder. Datum of gage is 626.52 ft (190.963 m) above mean sea level, adjustment of 1912. Prior to July 14, 1924, nonrecording gage, and July 15, 1924 to Sept. 30, 1972, recording gage at same site at datum 10.00 ft (3.048 m) higher.

REMARKS.--Records good except those for winter period, which are poor. Diurnal fluctuation caused by powerplant 4 mi (6.4 km) above station. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

COOPERATION.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--64 years, 1,009 ft³/s (28.57 m³/s), 0.82 in/yr (224 mm/yr), 731,000 acre-ft/yr (901 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 48,000 ft³/s (1,360 m³/s) June 27, 1944, gage height, 24.70 ft (7.529 m) at datum then in use; minimum daily, 105 ft³/s (2.97 m³/s) Feb. 11-20, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--A flood, probably in 1903, reached a stage of 23.5 ft (7.16 m), discharge, 43,000 ft³/s (1,220 m³/s), at datum in use prior to Oct. 1, 1972.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,870 ft³/s (138 m³/s) Sept. 18, gage height, 17.73 ft (5.404 m) no peak above base of 7,500 ft³/s (212 m³/s); minimum daily, 135 ft³/s (3.82 m³/s) Dec. 31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	202	358	280	145	180	647	816	408	361	664	289	508
2	308	361	370	155	180	709	493	415	350	340	293	467
3	319	350	330	170	185	669	414	413	351	320	290	440
4	304	339	300	172	190	843	456	424	332	295	269	386
5	367	331	290	175	195	909	568	502	336	289	361	401
6	402	327	280	175	190	825	508	600	339	276	649	343
7	378	337	260	165	195	856	566	493	291	261	367	376
8	350	308	260	160	210	634	520	525	258	250	658	340
9	325	326	250	160	230	533	527	437	271	265	746	330
10	325	332	240	160	270	579	488	414	253	249	513	303
11	325	339	220	160	350	596	484	411	270	253	425	306
12	325	279	200	160	520	660	484	414	250	261	369	305
13	332	253	200	165	600	777	445	421	269	248	354	310
14	320	246	180	160	780	775	466	396	235	235	365	305
15	326	284	180	165	630	624	419	394	235	226	328	303
16	318	322	190	165	610	454	443	385	238	462	1070	311
17	282	359	200	160	660	487	416	406	235	2100	793	348
18	318	385	205	175	730	471	426	395	265	2410	505	3140
19	328	390	210	165	750	499	421	402	257	1380	483	1150
20	338	367	200	165	780	453	427	340	252	762	628	838
21	349	345	190	170	900	445	484	599	262	577	630	716
22	340	336	190	170	1060	450	528	648	239	593	703	636
23	340	292	185	175	2340	399	553	596	238	406	563	557
24	341	271	200	175	2560	391	551	522	255	372	508	1370
25	340	335	200	180	1460	377	499	413	276	348	444	647
26	348	395	205	190	1200	372	416	416	248	356	428	734
27	341	361	210	190	910	387	412	409	257	347	426	691
28	338	363	210	190	684	459	385	374	243	312	420	681
29	323	450	200	195	---	807	426	352	235	326	556	631
30	340	420	170	185	---	702	438	385	775	316	581	565
31	358	---	135	180	---	673	---	374	---	312	511	---
TOTAL	10250	10162	7040	5277	19549	18532	14179	13683	8684	15812	15562	18680
MEAN	331	330	227	170	606	598	473	441	269	510	503	623
MAX	402	459	380	195	2560	909	568	648	775	2410	1070	3140
MIN	202	246	135	145	180	372	385	340	235	226	269	302
CFSM	.21	.22	.15	.11	.45	.39	.31	.20	.19	.33	.32	.40
IN.	.25	.24	.17	.13	.47	.44	.34	.33	.21	.38	.37	.45
AC-FT	20330	20160	13960	10470	38780	36760	28120	27140	17220	31360	30910	37050

CAL YR 1976 TOTAL 243366 MEAN 665 MAX 10500 MIN 135 CFSM .43 IN 5.83 AC-FT 482700
WTR YR 1977 TOTAL 187430 MEAN 431 MAX 3140 MIN 135 CFSM .28 IN 3.77 AC-FT 312300

MISSISSIPPI RIVER MAIN STEM

49

05420500 MISSISSIPPI RIVER AT CLINTON, IA
(National stream-quality accounting network station)

LOCATION.--Lat 41°45'53", long 90°15'04", in NW1/4 sec.34, T.81 N., R.6 E., Clinton County, Hydrologic Unit 07090101, on right bank at foot of Seventh Avenue in Camanche, 5.0 mi (8.0 km) upstream from Wapsipinicon River, 8.4 mi (10.3 km) downstream from Clinton, 10.6 mi (17.1 km) downstream from dam 13, and at mile 511.8 (823.5 km) upstream from Ohio River. Prior to June 6, 1959, at site 400 ft (122 m) downstream.

DRAINAGE AREA.--85,600 mi² (221,700 km²), approximately, at Fulton-Lyons Bridge where discharge measurements are made.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June to August 1873 (fragmentary), October 1873 to current year (October 1932 to September 1939, published as "at Le Claire").

REVISED RECORDS.--WRD IA-75-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 552.68 ft (171.505 m) above mean sea level. Oct. 1, 1955, to June 5, 1959, water-stage recorder at site 400 ft (121 m) downstream at same datum. Auxiliary water-stage recorder at dam 13 since Oct. 1, 1955. See WSP 1728 for history of changes prior to Oct. 1, 1955.

REMARKS.--Records good except those for winter period, which are poor. Minor flow regulation caused by navigation dams.

COOPERATION.--Five discharge measurements and discharge data at Lock and Dam No. 13 furnished by Corps of Engineers.

AVERAGE DISCHARGE.--104 years. 47,040 ft³/s (1,332 m³/s), 7.46 in/yr (189 mm/yr), 34,080,000 acre-ft/yr (42,020 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 307,000 ft³/s (8,690 m³/s) Apr. 25, 1955; maximum gage height, 24.65 ft (7.513 m) Apr. 25, 1955; minimum daily discharge, 5,500 ft³/s (154 m³/s) Dec. 25-27, 1933.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since at least 1828 that of Apr. 25, 1955.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 50,800 ft³/s (1,440 m³/s) Jul. 19; maximum gage height, 10.65 ft (3.249 m) Jul. 19; minimum daily discharge, 9,600 ft³/s (272 m³/s) Dec. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14900	18200	10800	12300	11100	25000	37900	38600	19900	26400	16400	19400
2	14300	18400	10100	12400	11200	24500	37300	35100	20800	25600	16900	20600
3	13900	19000	9800	11900	11500	23700	39700	30700	21100	24500	12600	28800
4	14300	18100	9700	11800	12000	24800	41400	24100	21100	24000	16200	32600
5	12100	18700	9600	11500	12800	24300	45700	25300	20300	24300	17400	34400
6	15100	17600	9800	11300	13200	23800	47200	25700	20900	23300	18000	37400
7	15200	16400	10000	11700	13600	24000	46800	26600	24700	22200	16800	35200
8	17100	15200	10100	11500	13800	23000	44200	24800	27200	25000	20500	33900
9	16900	14600	10200	11400	14000	25100	41000	24200	29600	28600	20100	33600
10	16600	14600	10300	11300	14200	27800	38100	22800	30000	29400	21200	33300
11	17100	14000	10300	11300	14800	30100	37500	22500	27500	29200	22800	32900
12	16200	14800	10200	11200	15600	36900	34500	22300	24700	28900	21000	31000
13	15200	15600	10200	11200	16900	42400	29300	20900	20400	28100	17800	30900
14	18600	15900	10200	11200	18100	41800	24700	19300	17100	26900	12400	31900
15	17400	15800	10400	11200	18500	41200	23800	18200	17000	22600	11800	24900
16	16100	16200	10800	11400	18900	43400	24300	17900	17500	19800	13100	30000
17	18600	17100	11800	11600	19000	43300	26300	17900	17600	19200	14500	26900
18	18500	15600	12800	11800	19000	45100	26700	18200	23100	31100	14900	26100
19	18900	14900	13600	11900	19000	47900	31000	20100	25600	50800	14200	27800
20	17200	14400	14200	12000	19200	45500	34400	23300	25900	38900	12000	27700
21	18000	14200	14700	12000	19700	43300	37000	25200	25900	25100	12600	24900
22	18600	14000	14200	12000	19500	41800	41200	28000	24300	20400	13300	22900
23	15200	13400	13800	11700	22600	39100	43200	25700	23600	18700	13600	23600
24	15400	12700	12000	11300	31800	35000	43300	25400	22500	17400	13200	30700
25	15800	11200	10800	11300	40500	28800	42800	23400	22200	15100	10500	32800
26	14900	9700	10600	11700	36800	29700	42900	21600	22400	20900	9660	35700
27	15900	10000	10800	11300	31100	29300	43000	19800	21200	20500	10500	38500
28	17700	10500	11000	12000	29700	32300	41700	18100	21400	21100	11800	40200
29	17300	10900	11500	12100	---	40100	41700	17400	22600	18000	14700	41700
30	16400	10500	11800	12100	---	47500	41000	17300	23800	16000	17000	45000
31	16500	---	12200	11700	---	43900	---	18500	---	17600	18700	---
TOTAL	494900	442200	348300	361200	537100	1074400	1129600	718900	681800	750400	476160	935300
MEAN	15960	14740	11240	11650	19180	34660	37650	23180	22730	24530	15350	31180
MAX	18600	19000	14700	12400	40500	47900	47200	38600	30000	50600	22800	45000
MIN	12100	9700	9600	11200	11100	23000	23800	17300	17000	15100	9660	19400
CFSM	.19	.17	.13	.14	.22	.41	.44	.27	.27	.29	.18	.26
IN.	.22	.19	.15	.15	.23	.47	.49	.31	.30	.23	.21	.41
AC-FT	981600	877100	690900	716400	1065000	2131000	2241000	1426000	1352000	1508000	944500	1850000

CAL YR 1976 TOTAL 12641800 MEAN 34540 MAX 154000 MIN 9600 CFSM .40 IN 5.45 AC-FT 25070000
WTR YR 1977 TOTAL 7960260 MEAN 21810 MAX 50800 MIN 9600 CFSM .26 IN 3.45 AC-FT 15790000

MISSISSIPPI RIVER MAIN STEM

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued
(National Stream-quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Samples collected at bridge on State Highway 136 in Clinton, 6.4 mi (10.3 km) upstream from discharge station.

PERIOD OF RECORD.--Water years 1974 to current year.

REMARKS.--Recorded water temperature data for station 05420400 at Dam 13 available since June 1969 in reports of Water Resources Data for Illinois.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	DIS- SOLVED SILICA (SI02) (MG/L) (00955)	TOTAL IRON (FE) (UG/L) (01045)	DIS- SOLVED IRON (FE) (UG/L) (01046)	TOTAL MAN- GANESE (MN) (UG/L) (01085)	SUS- PENDED MAN- GANESE (MN) (UG/L) (01084)	DIS- SOLVED MAN- GANESE (MN) (UG/L) (01056)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)
OCT										
27...	1130	16500	.1	--	--	--	--	--	42	19
JAN										
04...	1030	14000	2.1	--	--	--	--	--	47	22
FEB										
09...	1200	13900	8.8	--	--	--	--	--	49	21
MAR										
23...	1300	42000	7.3	830	110	110	70	40	42	16
APR										
21...	1000	28200	.2	--	--	--	--	--	32	16
JUN										
07...	1400	24700	--	--	--	--	--	--	--	--
JUL										
18...	1300	30000	.5	--	--	--	--	--	37	16
AUG										
19...	1230	14000	.2	--	--	--	--	--	34	16
SEP										
14...	1030	34000	8.0	1800	30	200	200	0	35	15

DATE	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	ALKA- LINITY AS CACO3 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)
OCT										
27...	9.0	2.7	195	0	161	18	12	.3	.04	.71
JAN										
04...	13	2.2	220	0	180	28	17	.2	.24	1.1
FEB										
09...	13	2.4	213	0	170	21	17	.4	.01	.90
MAR										
23...	13	3.8	162	0	130	21	15	.1	.74	1.6
APR										
21...	11	3.0	130	0	110	24	14	.1	.01	1.5
JUN										
07...	--	--	--	--	--	--	--	--	--	--
JUL										
18...	11	2.6	160	0	130	28	11	.1	.02	.92
AUG										
19...	9.6	2.4	160	0	130	18	10	.2	.18	.62
SEP										
14...	7.8	2.4	150	0	120	22	13	.2	.26	--

DATE	TOTAL NITRO- GEN (N) (MG/L) (00600)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L) (70301)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	PERCENT SODIUM (00932)
OCT										
27...	.75	3.3	.10	205	200	.28	9130	180	22	10
JAN										
04...	1.3	5.9	.08	247	240	.34	9340	210	27	12
FEB										
09...	1.7	7.6	.10	338	238	.46	12700	210	34	12
MAR										
23...	2.3	10	.20	198	198	.27	22500	170	38	14
APR										
21...	1.5	6.7	.15	192	163	.26	19800	140	35	14
JUN										
07...	--	--	--	--	--	--	--	--	--	--
JUL										
18...	.94	4.2	.17	200	185	.27	16200	160	27	13
AUG										
19...	.80	3.5	.18	166	168	.25	7030	150	18	12
SEP										
14...	--	--	.24	177	177	.24	16200	150	26	10

MISSISSIPPI RIVER MAIN STEM

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05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued
(National Stream-quality accounting network station)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	SODIUM AD- SORP- TION RATIO (00931)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (JTU) (00070)	CARBON DIOXIDE (CO2) (MG/L) (00405)	TOTAL PHYTO- PLANK- TON (CELLS PER ML) (60050)	FECAL COLI- FORM (COL./ 100 ML) (31625)	FECAL STREP- TOCOCCI KF AGAR (COL. PER 100 ML) (31673)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)
OCT 27...	.3	370	8.0	9.0	15	3.1	23000	38	60	--
JAN 04...	.4	240	8.8	.6	5	.6	15000	896	280	--
FEB 09...	.4	350	7.8	.0	2	5.4	--	300	110	--
MAR 23...	.4	350	8.7	4.5	8	.5	--	44	110	--
APR 21...	.4	240	8.5	18.0	15	.7	--	88	120	--
JUN 07...	--	330	8.4	27.0	--	--	--	200	90	--
JUL 18...	.4	340	7.6	29.0	9	6.4	--	--	--	--
AUG 19...	.3	400	7.6	25.0	10	6.4	--	140	140	--
SEP 14...	.3	330	8.2	21.5	25	1.5	27000	230	180	--

DATE	TOTAL ARSENIC (AS) (UG/L) (01002)	SUS- PENDE D ARSENIC (AS) (UG/L) (01001)	DIS- SOLVED ARSENIC (AS) (UG/L) (01000)	TOTAL CAD- MIUM (CD) (UG/L) (01027)	SUS- PENDE D CAD- MIUM (CD) (UG/L) (01026)	DIS- SOLVED CAD- MIUM (CD) (UG/L) (01025)	TOTAL CHRO- MIUM (CR) (UG/L) (01034)	SUS- PENDE D CHRO- MIUM (CR) (UG/L) (01031)	DIS- SOLVED CHRO- MIUM (CR) (UG/L) (01030)	TOTAL COBALT (CO) (UG/L) (01037)
OCT 27...	--	--	--	--	--	--	--	--	--	--
MAR 23...	1	0	1	2	2	0	<10	<10	0	0
APR 21...	--	--	--	--	--	--	--	--	--	--
AUG 19...	--	--	--	--	--	--	--	--	--	--
SEP 14...	2	0	2	<10	<8	2	10	0	10	<50

DATE	SUS- PENDE D COBALT (CO) (UG/L) (01036)	DIS- SOLVED COBALT (CO) (UG/L) (01035)	TOTAL COPPER (CU) (UG/L) (01042)	SUS- PENDE D COPPER (CU) (UG/L) (01041)	DIS- SOLVED COPPER (CU) (UG/L) (01040)	TOTAL LEAD (PB) (UG/L) (01051)	SUS- PENDE D LEAD (PB) (UG/L) (01050)	DIS- SOLVED LEAD (PB) (UG/L) (01049)	TOTAL MERCURY (,) (UG/L) (71900)	SUS- PENDE D MERCURY (HG) (UG/L) (71895)
OCT 27...	--	--	--	--	--	--	--	--	--	--
MAR 23...	0	0	16	7	9	10	10	0	.2	.0
APR 21...	--	--	--	--	--	--	--	--	--	--
AUG 19...	--	--	--	--	--	--	--	--	--	--
SEP 14...	<50	0	<10	<8	2	<100	<76	24	.1	.0

DATE	DIS- SOLVED MERCURY (HG) (UG/L) (71890)	TOTAL SIL- NIUM (SE) (UG/L) (01147)	SUS- PENDE D SIL- NIUM (SE) (UG/L) (01146)	DIS- SOLVED SIL- NIUM (SE) (UG/L) (01145)	TOTAL ZINC (ZN) (UG/L) (01092)	SUS- PENDE D ZINC (ZN) (UG/L) (01091)	DIS- SOLVED ZINC (ZN) (UG/L) (01090)	SUS- PENDE D SED- IMENT (MG/L) (80154)	SUS- PENDE D DIS- CHARGE (T/DAY) (00155)
OCT 27...	--	--	--	--	--	--	--	25	1110
MAR 23...	.2	0	0	0	60	0	100	41	4650
APR 21...	--	--	--	--	--	--	--	53	5470
AUG 19...	--	--	--	--	--	--	--	47	1780
SEP 14...	.3	0	0	0	30	20	10	70	5430

MISSISSIPPI RIVER MAIN STEM

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued
(National Stream-quality accounting network station)

WATER QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SUS- PENDE SEDIM- ENT CHARGE (MG/L) (00154)	SUS- PENDE SEDIM- ENT CHARGE (T/DAY) (00155)	SUS. SED. SIEVE DIAM. % FINER THAN (70331)
OCT 27...	1130	9.0	16500	25	1110	--
MAR 23...	1300	4.5	42000	41	4550	91
APR 21...	1000	18.0	38200	53	5470	87
AUG 19...	1230	26.0	14000	47	1780	89
SEP 14...	1030	21.5	34000	70	6430	92

MISSISSIPPI RIVER MAIN STEM

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05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued
(National Stream-quality accounting network station)

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	OCT 27, 76 1130	JAN 4, 77 1030	FEB 9, 77 1200	SEP 14, 77 1030
TOTAL CELLS/ML	23000	18000	350	27000
DIVERSITY: DIVISION	1.5	0.0	1.5	1.5
..CLASS	1.5	0.0	1.5	1.5
..ORDER	1.5	0.0	2.1	2.0
...FAMILY	1.9	0.0	2.4	2.1
....GENUS	2.6	0.3	2.6	2.3

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....CHLORACIACEAE								
....SCHROEDERIA	--	--	--	--	--	--	*	0
...MICRACIACEAE	5200#	22	--	--	13	4	--	--
...OOCYSTACEAE								
....ANKISTRODESUS	360	2	--	--	--	--	*	0
....DICTYOSPHAERIUM	*	0	--	--	--	--	--	--
....KIRCHNERIELLA	*	0	--	--	--	--	--	--
....OOCYSTIS	--	--	--	--	--	--	700	3
....SELENASTRUM	*	0	--	--	--	--	320	1
....TREUBARIA	*	0	--	--	--	--	--	--
...SCENEDESMACEAE								
....ACTINASTRUM	*	0	--	--	--	--	--	--
...SCENEDESMUS	1200	5	*	0	40	11	1100	4
...TETRASTRUM	1800	8	*	0	27	8	*	0
...TETRASPOALES								
...TETRASPORACEAE								
...SCHIZOCHLAMY	--	--	--	--	7	2	--	--
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
...CHLAMYDOMONAS	--	--	*	0	--	--	--	--
...ZYGNEMATALES								
...DESMIDIACEAE								
...CLOSTERIUM	*	0	--	--	--	--	--	--
...COSMARIUM	--	--	--	--	--	--	*	0
...ZYGNEMATAACEAE								
...MOUGEOTIA	--	--	--	--	--	--	1200	4
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCACEAE								
...CYCLOTELLA	--	--	14000#	95	54#	15	570	2
...MELOSIRA	4900#	21	*	0	--	--	12000#	44
...STEPHANODISCUS	5100#	26	770	5	--	--	--	--
...PENNALIS								
...CYMBELLACEAE								
...CYMBELLA	--	--	*	0	--	--	--	--
...DIATOMACEAE								
...DIATOMA	--	--	--	--	3	1	--	--
...FRAGILARIACEAE								
...ASTERIONELLA	*	0	*	0	120#	35	--	--
...SYNEURA	*	0	*	0	--	--	*	0
...NAVICULACEAE								
...NAVICULA	*	0	--	--	--	--	--	--
...NITZSCHACEAE								
...NITZSCHIA	*	0	*	0	10	3	--	--
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCOCCALES								
...CHROCOCCACEAE								
....AGMENELLUM	--	--	--	--	--	--	480	2
....ANACYSTIS	*	0	--	--	--	--	2500	9
...HORMOGONALES								
...OSCILLATORIACEAE								
...OSCILLATORIA	3700#	15	*	0	71#	20	7800#	29
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
...EUGLENACEAE								
...EUGLENA	--	--	--	--	3	1	*	0
...TRACHELOMONAS	*	0	*	0	--	--	*	0
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
...PERIDINIALES								
...PERIDINIACEAE								
...PERIDINIUM	--	--	--	--	--	--	*	0

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

WAPSIPINICON RIVER BASIN

05420560 WAPSIPINICON RIVER NEAR ELMA, IA

LOCATION.--Lat 43°14'34", long 92°31'48", in NW1/4 NW1/4 sec.8, T.97 N., R.14 W., Howard County, Hydrologic Unit 07080102, on right bank 10 ft (3 m) downstream from bridge on county highway B17, 0.2 mi (0.3 km) downstream from small left-bank tributary, 4.8 mi (7.7 km) west of Elma, and at mile 217.9 (350.6 km).

DRAINAGE AREA.--95.2 mi² (247 km²).

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,130.05 ft (344.439 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--19 years, 57.5 ft³/s (1.628 m³/s), 8.20 in/yr (208 mm/yr), 41,660 acre-ft/yr (51.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,100 ft³/s (286 m³/s) June 4, 1974, gage height, 14.94 ft (4.554 m), from high-water mark in well; minimum daily, 1.9 ft³/s (0.054 m³/s) Feb. 4-8, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 68 ft³/s (1.93 m³/s) May 30, gage height, 5.12 ft (1.561 m) no peak above base of 600 ft³/s (17.0 m³/s); maximum gage height, 8.11 ft (2.472 m) Mar. 9, backwater from ice; minimum daily discharge, 3.0 ft³/s (0.085 m³/s) Jan. 17 to Feb. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.9	10	5.7	4.1	3.0	7.0	31	11	19	9.5	5.6	14
2	6.1	9.9	5.6	3.9	3.0	7.0	37	10	15	6.8	5.5	14
3	6.1	9.5	6.6	3.8	3.0	7.0	50	9.5	13	7.0	5.4	14
4	5.4	9.0	5.6	3.7	3.0	7.1	46	11	11	6.9	5.3	14
5	5.6	9.0	5.7	3.6	3.0	7.9	39	28	11	5.3	5.3	14
6	6.3	8.6	5.8	3.6	3.0	9.0	31	32	9.7	7.1	5.3	14
7	6.4	8.4	5.9	3.5	3.0	10	25	21	8.8	18	5.6	14
8	7.5	7.5	6.1	3.4	3.0	20	23	16	8.9	13	9.8	14
9	6.5	6.3	6.4	3.3	3.0	46	20	13	8.4	11	13	16
10	6.7	5.5	6.7	3.3	3.0	48	19	12	7.9	9.5	13	16
11	7.6	5.0	6.9	3.2	3.1	45	17	11	8.5	8.2	10	17
12	8.0	5.3	7.0	3.2	3.3	44	15	10	7.8	11	8.6	18
13	7.7	5.6	7.0	3.1	3.4	43	15	9.7	7.1	8.1	6.7	20
14	7.3	6.0	7.0	3.1	3.7	41	14	8.9	6.8	6.5	5.8	20
15	6.9	6.5	7.0	3.1	3.9	38	14	8.8	6.7	5.8	6.4	21
16	7.2	7.0	7.0	3.1	4.1	37	13	9.0	7.0	6.0	12	22
17	7.4	7.6	7.1	3.0	4.3	36	13	8.9	7.6	9.3	12	25
18	8.1	8.0	7.1	3.0	4.4	35	13	8.9	7.3	17	8.8	27
19	9.5	8.4	7.0	3.0	4.5	31	13	8.1	5.2	12	14	23
20	9.3	6.9	7.0	3.0	4.5	22	14	8.6	5.7	7.9	26	17
21	9.6	6.0	6.9	3.0	4.7	14	39	11	5.8	7.4	19	16
22	9.4	5.5	6.9	3.0	5.0	5.3	40	31	6.1	6.2	16	15
23	9.5	5.8	6.4	3.0	5.4	3.6	29	32	5.6	5.6	15	17
24	10	6.1	6.1	3.0	5.9	6.0	20	16	5.6	27	13	40
25	11	6.3	6.0	3.0	6.7	4.6	16	12	5.1	34	12	31
26	11	6.9	6.0	3.0	6.9	9.2	14	10	4.7	15	12	25
27	11	6.6	5.9	3.0	7.0	23	14	21	4.6	10	14	22
28	10	6.2	5.7	3.0	7.0	28	13	28	5.8	8.7	15	18
29	10	5.9	5.3	3.0	---	31	12	23	5.4	8.0	35	16
30	10	5.7	4.8	3.0	---	34	11	40	7.8	6.9	28	25
31	10	---	4.3	3.0	---	31	---	27	---	6.5	15	---
TOTAL	253.0	210.0	193.5	100.0	117.8	730.6	570	505.4	239.9	321.1	376.1	581
MEAN	8.16	7.00	6.24	3.23	4.21	23.6	22.3	16.3	8.00	10.4	12.2	19.4
MAX	11	10	7.1	4.1	7.0	48	50	40	19	34	35	40
MIN	5.4	5.0	4.3	3.0	3.0	3.6	11	8.1	4.6	5.3	5.3	14
CFSM	.09	.07	.07	.03	.04	.25	.23	.17	.08	.11	.13	.20
INL	.10	.08	.08	.04	.05	.29	.26	.20	.09	.12	.15	.23
AC-FT	502	417	304	198	234	1450	1320	1000	476	637	750	1150

CAL YR 1976 TOTAL 9407.1 MEAN 25.7 MAX 531 MIN 4.3 CFSM .27 IN 3.68 AC-FT 18660
WTR YR 1977 TOTAL 4301.4 MEAN 11.8 MAX 50 MIN 3.0 CFSM .12 IN 1.68 AC-FT 8530

WAPSIPINICON RIVER BASIN

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05421000 WAPSIPINICON RIVER AT INDEPENDENCE, IA

LOCATION.--Lat 42°27'49", long 91°53'42", in SE1/4 sec.4, T.88 N., R.9 W., Buchanan County, Hydrologic Unit 07080102, on right bank at Sixth Street in Independence, 1,800 ft (549 m) downstream from dam at abandoned hydroelectric plant, 4.9 mi (7.9 km) downstream from Otter Creek, 9.7 mi (15.6 km) upstream from Pine Creek, and at mile 142.5 (229.3 km).

DRAINAGE AREA.--1,048 mi² (2,714 km²).

PERIOD OF RECORD.--July 1933 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1938-39, 1940 (M), 1947.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 882.85 ft (269.093 m) above mean sea level. Prior to May 24, 1941, nonrecording gage in tailrace of powerplant 1,800 ft (549 m) upstream at datum 80.00 ft (24.38 m) lower.

REMARKS.--Records excellent. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--44 years, 559 ft³/s (15.83 m³/s), 7.24 in/yr (184 mm/yr), 405,000 acre-ft/yr (1499 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,800 ft³/s (759 m³/s) July 18, 1958, gage height, 21.11 ft (6.434 m); minimum daily, 7.0 ft³/s (0.20 m³/s) several days in 1934 and 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1901, that of July 18, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,100 ft³/s (31.2 m³/s) Sept. 27, gage height, 5.94 ft (1.811 m), no peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 7.0 ft³/s (0.20 m³/s) Jan. 25-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	52	30	23	8.0	81	224	135	70	39	59	567
2	16	56	30	23	9.0	77	262	126	79	40	55	520
3	16	56	29	23	9.0	81	271	117	75	41	52	452
4	16	44	28	21	9.0	98	346	142	71	42	49	413
5	16	42	29	20	9.0	106	373	190	69	44	51	366
6	16	49	31	19	9.0	121	367	174	64	46	50	328
7	18	49	29	17	9.0	121	374	172	53	39	52	292
8	20	38	28	15	9.0	141	340	166	58	38	54	256
9	25	43	28	14	9.0	169	302	145	53	44	54	244
10	25	41	28	13	16	191	270	141	51	63	58	206
11	25	37	28	13	32	260	240	138	52	60	62	185
12	29	33	26	13	30	414	213	126	49	51	70	196
13	32	35	25	13	27	489	199	112	48	41	79	184
14	27	36	23	13	25	489	186	102	48	42	71	170
15	33	38	23	12	26	618	186	91	47	39	69	166
16	24	39	24	12	28	430	177	86	45	38	148	167
17	22	41	24	12	28	345	172	87	50	41	130	165
18	22	42	25	10	30	330	163	100	51	45	155	598
19	30	43	26	10	30	273	153	127	50	85	227	887
20	34	45	28	10	31	254	158	85	46	145	345	937
21	37	46	30	9.0	30	234	206	40	43	115	367	939
22	31	40	29	9.0	33	208	199	44	42	82	311	779
23	33	34	28	9.0	51	197	203	63	42	67	296	620
24	47	40	28	8.0	105	173	190	75	41	76	280	850
25	45	46	26	7.0	116	173	180	79	38	86	241	937
26	44	50	25	7.0	121	162	179	78	38	68	304	997
27	43	46	25	7.0	106	173	178	71	37	57	401	1050
28	44	35	26	7.0	85	179	163	75	37	71	570	944
29	44	35	26	7.0	---	221	150	75	35	131	628	786
30	54	32	25	7.0	---	227	139	72	39	96	598	790
31	54	---	24	8.0	---	221	---	79	---	83	600	---
TOTAL	938	1265	834	391.0	1031.0	7255	6763	3313	1521	1955	6466	15986
MEAN	30.3	42.2	26.9	12.6	36.8	234	225	107	50.7	63.1	209	532
MAX	54	58	31	23	121	618	374	190	79	145	628	1050
MIN	16	32	23	7.0	8.0	77	139	40	35	38	49	165
CFSM	.03	.04	.03	.01	.04	.22	.22	.10	.05	.06	.20	.51
IN-	.03	.04	.03	.01	.04	.26	.24	.12	.05	.07	.23	.57
AC-FT	1860	2510	1650	776	2040	14390	13410	6570	3020	3880	12860	31710

CAL YR 1976 TOTAL 124917.0 MEAN 341 MAX 7300 MIN 13 CFSM .33 IN 4.43 AC-FT 247800
WTR YR 1977 TOTAL 47740.0 MEAN 131 MAX 1050 MIN 7.0 CFSM .13 IN 1.69 AC-FT 94690

WAPSIPINICON RIVER BASIN

05422000 WAPSIPINICON RIVER NEAR DE WITT, IA

LOCATION.--Lat 41°46'01", long 90°32'05", in SW1/4 NE1/4 sec.8, T.80 N., R.4 E., Clinton County, Hydrologic Unit 07080103, on left bank 5 ft (1.5 m) upstream from bridge on U.S. Highway 61, 0.9 mi (1.4 km) downstream from Silver Creek, 4.0 mi (6.4 km) south of water tower in De Witt, 6.2 mi (10.0 km) upstream from Brophy Creek, and 18.2 mi (29.3 km) upstream from mouth.

DRAINAGE AREA.--2,330 mi² (6,034 km²).

PERIOD OF RECORD.--June 1934 to current year.

REVISED RECORDS.--WSP 1308: 1937 (M). WSP 1438: Drainage area. WSP 1708: 1951.

GAGE.--Water-stage recorder. Datum of gage is 598.81 ft (182.517 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--43 years, 1,435 ft³/s (40.64 m³/s), 8.36 in/yr (212 mm/yr), 1,039,700 acre-ft/yr (1,282 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,900 ft³/s (847 m³/s) May 17, 1974, gage height, 13.07 ft (3.984 m); minimum daily, 46 ft³/s (1.30 m³/s) Jan. 22, 23, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,540 ft³/s (157 m³/s) Sept. 19, gage height, 10.90 ft (3.322 m) no peak above base of 5,000 ft³/s (170 m³/s); minimum daily, 46 ft³/s (1.30 m³/s) Jan. 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	118	160	170	90	58	360	551	355	225	3040	175	630
2	116	155	152	08	50	400	518	349	221	2020	134	708
3	116	164	138	02	51	420	491	339	217	524	230	746
4	114	162	130	78	52	450	494	338	211	420	205	751
5	146	160	122	76	52	450	506	358	206	290	188	740
6	161	159	114	72	52	410	519	362	199	260	215	706
7	152	161	106	65	52	377	518	347	201	240	225	656
8	145	155	96	66	54	403	524	342	206	220	765	609
9	136	161	80	64	60	471	532	356	200	196	1600	570
10	134	160	88	64	60	440	526	361	206	178	1000	536
11	132	157	88	65	76	471	516	351	267	175	604	507
12	125	135	88	63	90	513	503	340	454	158	536	488
13	122	118	80	60	116	524	484	328	252	156	492	482
14	119	109	90	57	108	568	466	318	231	146	816	459
15	115	126	90	54	110	535	449	310	208	163	651	436
16	118	142	92	52	124	556	438	301	193	151	888	434
17	118	165	93	51	130	564	433	353	192	260	2060	434
18	146	178	94	47	148	584	409	307	301	371	1310	2900
19	166	185	98	48	160	609	395	285	263	315	865	5320
20	154	186	98	48	170	580	394	277	191	238	666	4170
21	145	173	96	48	190	549	411	305	176	205	623	2740
22	141	156	98	46	200	525	425	343	171	190	596	2330
23	137	120	100	46	242	502	423	401	165	175	553	2120
24	138	124	98	48	358	478	410	390	163	178	548	2320
25	140	148	100	50	326	447	395	333	181	202	549	2420
26	141	194	102	50	330	420	386	313	184	192	544	2160
27	140	200	102	52	340	406	377	276	161	208	528	2120
28	141	151	104	52	340	406	370	260	147	202	544	2120
29	144	220	106	53	---	534	361	250	142	198	598	1970
30	153	190	104	52	---	594	356	242	842	180	571	1880
31	161	---	97	54	---	584	---	233	---	185	584	---
TOTAL	4234	4810	3230	1841	4101	15150	13579	10023	7015	11620	19930	44481
MEAN	127	150	104	59.4	146	489	452	323	224	375	643	1483
MAX	166	220	170	98	350	609	551	401	642	3040	2060	5320
MIN	114	109	88	46	50	360	356	232	142	146	129	434
CFSM	.06	.07	.05	.03	.06	.21	.19	.14	.10	.16	.26	.64
IN	.07	.08	.05	.03	.07	.24	.22	.16	.11	.19	.32	.71
AC-FT	8460	9540	5410	3650	8130	30050	26930	19080	13910	23060	39560	86230

CAL YR 1976 TOTAL 261622 MEAN 718 MAX 7760 MIN 88 CFSM .21 IN 4.18 AC-FT 518900
WTR YR 1977 TOTAL 140030 MEAN 384 MAX 5320 MIN 46 CFSM .17 IN 2.24 AC-FT 277700

PINE CREEK BASIN

05448150 PINE CREEK NEAR MUSCATINE, IA

LOCATION.--Lat 41°28'03", long 90°52'04", in SE1/4 SE1/4 sec.17, T.77 N., R.1 E., Muscatine County, Hydrologic Unit 07080101, on right bank in Old Pine Creek Mill at Wildcat Ban State Park, 9.0 miles (15.0 km) NE of Muscatine, and 1.5 miles (2.4 km) upstream from mouth.

DRAINAGE AREA.--38.9 sq mi (100.8 km²).

PERIOD OF RECORD.--October 1976 to current year.

GAGE.--Water-stage recorder. Prior to June 30, 1977, mill dam control.

REMARKS.--Records fair except those for winter period and the period after June 30, which are poor. Mill dam partially washed out on June 30.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,850 ft³/s (129 m³/s) July 20, 1976, gage height, 16.22 ft (4.944 m), from rating curve extended above 218 ft³/s (6.17 m³/s) on basis of indirect measurement of peak flow over dam of 3,670 ft³/s (104 m³/s), gage height, 18.80 ft (4.82 m) Mar. 4, 1976; no flow Jan. 11-16, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 700 ft³/s (19.82 m³/s) and maximum (*)

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)
Feb. 11	1628	1,800 51.0	13.33 4.063	Aug. 8	0855	4,500 127	10.68 3.255
June 30	0940	2,750 77.9	14.77 4.502	Sept. 18	0515	1,295 36.5	8.95 2.606
July 18	1435	1,170 33.1	8.47 2.582				

No flow Jan. 11-16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	2.7	.60	.02	.02	5.2	17	4.1	.67	52	1.6	4.6
2	1.4	2.5	.60	.02	.02	5.5	17	3.8	.53	15	81	3.6
3	1.4	2.3	.45	.02	.02	10	13	3.9	.53	3.2	51	2.2
4	1.4	2.3	.38	.02	.02	9.6	30	4.9	.40	1.4	33	2.2
5	15	2.3	.34	.01	.02	6.4	23	10	.53	13	49	1.8
6	7.8	2.3	.30	.01	.02	7.3	16	12	.20	14	67	1.6
7	3.1	2.2	.27	.01	.02	7.8	14	6.4	.30	1.2	75	.68
8	2.5	1.9	.24	.01	.02	10	12	4.7	1.0	1.4	737	.53
9	2.3	2.3	.21	.01	.02	11	12	3.6	.53	1.4	43	.27
10	2.2	2.3	.20	.01	.02	12	10	3.1	4.4	1.6	31	.21
11	2.2	2.0	.38	.00	439	14	9.5	3.0	3.1	1.6	26	.21
12	2.0	1.7	.19	.00	513	52	8.2	2.7	2.2	1.8	24	13
13	1.9	1.7	.40	.00	242	16	8.2	2.5	1.2	1.8	25	26
14	1.9	1.7	1.0	.00	19	12	8.2	2.3	.80	2.1	26	6.8
15	2.0	2.0	.60	.00	55	10	7.8	2.0	.63	2.1	23	3.6
16	2.2	2.0	.30	.00	24	7.3	6.9	13	.63	2.4	17	11
17	2.3	2.7	.10	.01	17	6.0	6.0	19	1.3	2.4	12	33
18	2.3	2.7	.08	.01	30	6.9	5.5	5.7	10	223	6.0	300
19	3.3	2.5	.06	.01	40	6.0	6.0	3.5	2.0	2.5	2.0	67
20	3.0	2.4	.04	.01	89	6.9	9.1	3.0	.60	2.8	1.0	51
21	1.9	2.2	.03	.01	139	9.6	19	4.1	.63	2.6	.44	40
22	1.9	1.7	.03	.01	149	14	12	3.3	.40	2.2	15	35
23	2.2	1.7	.03	.01	112	13	8.6	2.7	.40	3.2	12	36
24	2.3	2.0	.02	.01	55	12	7.3	2.2	.60	29	12	36
25	2.3	2.7	.05	.02	16	11	6.0	2.0	.67	3.8	3.9	30
26	2.2	2.5	.30	.02	8.2	10	5.7	2.0	.44	4.6	25	25
27	2.0	1.5	.10	.02	5.7	12	5.2	1.6	.40	5.1	17	21
28	1.9	1.0	.05	.02	5.5	36	4.7	1.2	.36	3.7	47	18
29	2.0	.80	.03	.02	---	72	4.4	.92	.30	3.3	28	18
30	2.5	.70	.02	.02	---	40	4.1	1.0	.624	2.2	14	18
31	3.1	---	.02	.02	---	22	---	.92	---	5.4	7.6	---
TOTAL	86.1	61.30	7.32	.36	2033.58	472.3	316.4	135.14	659.85	414.0	1812.54	808.38
MEAN	2.79	2.04	.24	.012	72.6	16.2	10.5	4.35	22.0	13.4	48.8	26.9
MAX	15	2.7	1.0	.02	513	72	30	19	624	223	737	300
MIN	1.4	.70	.02	.00	.02	5.2	4.1	.92	.20	1.2	.44	.21
CFSM	.07	.05	.006	.000	1.84	.39	.27	.11	.56	.34	1.24	.68
IN.	.08	.06	.01	.00	1.92	.46	.30	.13	.62	.39	1.43	.76
AC-FT	171	122	15	.7	4030	937	628	268	1910	821	3000	1660

CAL YR 1976 TOTAL 6786.56 MEAN 18.5 MAX 1190 MIN .02 CFSM .47 IN 6.41 AC-FT 13460
WTR YR 1977 TOTAL 6607.27 MEAN 17.8 MAX 737 MIN .00 CFSM .45 IN 6.14 AC-FT 12910

IOWA RIVER BASIN

05451500 IOWA RIVER AT MARSHALLTOWN, IA

LOCATION.--Lat 42°03'57", long 92°54'27", in SE1/4 SE1/4 sec.23, T.84N., R.18 W., Marshall County, Hydrologic Unit 07080208, on right bank 10 ft (3 m) downstream from State Highway 14 bridge, 1,500 ft (457 m) upstream from Burnett Creek, 2.2 mi (3.5 km) upstream from Linn Creek, and at mile 222.8 (358.5 km).

DRAINAGE AREA.--1,564 mi² (4,050 km²), including that of Burnett Creek.

PERIOD OF RECORD.--October 1902 to September 1903, October 1914 to September 1927, October 1932 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1958: 1915-18, 1919 (M), 1920, 1921-23 (M), 1924-27, 1933, 1934 (M), 1935, 1936, 1947 (M).

GAGE.--Water-stage recorder. Datum of gage is 853.10 ft (259.025 m) above mean sea level. See WSP 1728 for history of changes prior to Sept. 21, 1934.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--59 years (1902-3, 1914-27, 1932-7), 766 ft³/s (21.69 m³/s), 6.65 in/yr (169 mm/yr), 505,000 acre-ft/yr (605 km³/yr); median of yearly mean discharges, 630 ft³/s (19.5 m³/s), 6.0 in/yr (152 mm/yr), 500,000 acre-ft/yr (616 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,000 ft³/s (1,190 m³/s) June 4, 1918, gage height, 17.74 ft (5.407 m), from floodmark, from rating curve extended above 19,000 ft³/s (538 m³/s) on basis of velocity-area study; maximum gage height, 19.38 ft (5.907 m) June 23, 1974; minimum daily discharge, 4.7 ft³/s (0.13 m³/s) Jan. 25, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,330 ft³/s (179 m³/s) Aug. 17, gage height, 16.35 ft (4.983 m) at 0015 hours, no other peak above base of 5,000 ft³/s (142 m³/s); minimum daily, 4.7 ft³/s (0.13 m³/s) Jan. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	81	63	16	13	182	160	136	62	34	18	880
2	60	79	63	16	16	192	178	128	59	26	20	612
3	62	77	60	16	24	200	202	122	57	33	31	468
4	64	75	58	16	16	220	204	133	64	40	29	412
5	65	74	57	15	16	240	206	195	64	40	30	366
6	60	74	55	15	16	280	204	144	50	44	36	311
7	59	69	52	14	16	270	197	143	46	72	47	407
8	58	62	48	14	18	274	180	141	48	92	253	586
9	59	63	43	13	18	266	166	160	47	68	1110	569
10	59	69	41	13	17	250	157	153	47	52	433	501
11	62	62	38	12	17	280	144	135	47	43	369	380
12	63	62	35	13	20	330	141	120	46	37	277	319
13	63	73	33	13	20	326	138	107	41	26	196	342
14	59	90	32	12	29	317	136	99	41	29	158	387
15	60	94	29	11	64	272	135	94	38	22	202	326
16	59	99	32	18	67	238	135	92	34	45	4640	281
17	59	98	35	9.0	72	182	132	91	42	30	4260	273
18	60	97	31	6.5	80	188	136	88	63	28	1560	1780
19	62	87	29	5.7	86	176	135	84	107	49	969	1230
20	63	82	28	5.7	93	172	136	88	63	43	717	728
21	64	76	28	5.7	100	166	168	88	48	42	561	543
22	66	65	26	5.3	110	157	193	89	42	77	417	451
23	70	62	24	5.3	122	181	178	91	39	67	318	404
24	73	84	24	5.1	140	141	197	91	40	51	246	1090
25	74	105	23	4.7	158	140	220	82	45	43	200	1060
26	79	88	22	4.8	152	138	197	75	46	34	368	745
27	77	82	21	5.9	158	141	176	72	36	25	618	580
28	74	70	20	6.7	170	151	160	73	35	23	1350	493
29	76	82	20	8.0	---	160	148	74	33	35	1300	442
30	81	70	16	9.1	---	166	141	86	35	24	842	476
31	83	---	18	11	---	162	---	74	---	20	716	---
TOTAL	2037	2351	1106	317.5	1818	5528	5000	3349	1445	1296	22391	17441
MEAN	65.7	76.4	35.7	10.2	64.9	211	167	108	48.2	41.8	722	581
MAX	83	105	63	16	170	330	220	195	107	92	4840	1780
MIN	58	62	18	4.7	13	138	132	72	33	20	18	273
CFSM	.04	.05	.02	.007	.04	.14	.11	.07	.03	.03	.45	.37
IN.	.05	.06	.03	.01	.04	.16	.12	.08	.03	.03	.53	.41
AC-FT	4040	4660	2190	630	3610	12950	9920	6640	2870	2570	44410	34590

CAL YR 1976 TOTAL 219242.0 MEAN 599 MAX 7920 MIN 18 CFSM .38 IN 5.21 AC-FT 434900
WTR YR 1977 TOTAL 65079.5 MEAN 178 MAX 4640 MIN 4.7 CFSM .11 IN 1.55 AC-FT 129100

IOWA RIVER BASIN

59

05451700 TIMBER CREEK NEAR MARSHALLTOWN, IA

LOCATION.--Lat 42°00'25", long 92°51'15", in SE1/4 SW1/4 sec.8, T.83 N., R.17 W., Marshall County, Hydrologic Unit 07080208, on left bank 20 ft (6 m) downstream from bridge on U.S. Highway 30, 3.6 mi (5.8 km) upstream from mouth, and 4.1 mi (6.6 km) southeast of court house in Marshalltown.

DRAINAGE AREA.--118 mi² (306 km²).

PERIOD OF RECORD.--October 1949 to current year.

REVISED RECORDS.--WSP 1700: 1950-55, 1957-59.

GAGE --Water-stage recorder. Datum of gage is 849.44 ft (258.909 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--28 years, 65.9 ft³/s (1.856 m³/s), 7.58 in/yr (193 mm/yr), 47,740 acre-ft/yr (58.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s (340 m³/s) Aug. 16, 1977, gage height, 17.69 ft (5.392 m), no flow for a few days in 1956 and 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of 16.8 ft (5.12 m), discharge, 5,700 ft³/s (161 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28.3 m³/s) and maximum (*)

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)
Aug. 16	1030	*12,000 340	*17.69 5.392	Aug. 28	1645	2,150 60.9	13.10 3.993

No flow Jan. 26 to Feb. 2, July 15, 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	8.1	1.4	.20	.00	9.6	6.3	3.0	2.0	2.2	5.8	190
2	2.0	3.2	1.7	.15	.00	10	8.6	3.3	1.2	1.4	4.9	137
3	2.6	2.6	1.9	.13	.01	11	10	3.1	1.0	1.3	3.4	139
4	4.4	3.0	1.8	.12	.02	12	11	3.7	.90	1.6	3.7	184
5	4.6	2.2	1.9	.10	.03	13	14	6.1	1.1	9.4	4.5	130
6	2.9	1.7	2.1	.09	.04	12	9.5	6.7	1.3	183	8.3	103
7	2.8	2.4	2.0	.09	.05	11	7.1	5.5	1.1	3.0	11	93
8	2.7	4.5	1.9	.08	.09	12	6.1	5.1	.85	1.3	20	99
9	2.8	3.7	2.1	.08	.15	13	5.3	3.5	.87	.30	33	105
10	2.4	2.0	2.0	.07	.20	12	5.0	2.5	.79	.60	26	95
11	3.7	1.9	1.9	.07	.32	15	4.3	2.0	.98	1.6	11	81
12	2.4	2.0	2.0	.06	.48	14	3.5	2.0	1.0	1.6	7.2	70
13	2.2	5.1	1.9	.06	.77	12	3.4	2.0	1.1	1.3	5.0	68
14	2.6	4.2	1.9	.06	1.0	9.0	4.0	2.2	1.1	.74	5.2	58
15	2.9	5.3	1.8	.05	1.5	8.0	4.9	2.4	.72	.00	255	52
16	2.4	3.8	1.7	.05	2.1	2.5	4.6	2.3	.51	.00	6570	50
17	4.5	4.2	1.5	.04	3.2	7.6	3.9	1.8	1.1	1.4	599	66
18	5.0	5.3	1.4	.04	4.5	10	3.7	1.4	1.5	2.2	148	553
19	5.2	5.1	1.3	.03	6.2	11	3.5	1.4	1.1	1.3	117	213
20	6.2	3.9	1.2	.02	9.0	8.8	4.2	2.0	1.2	.65	117	138
21	6.7	5.1	1.0	.02	9.4	9.2	6.1	2.9	.95	.60	103	114
22	7.2	3.4	.90	.02	9.0	9.0	6.3	3.6	.65	.85	95	96
23	8.2	3.2	.80	.02	9.4	7.3	4.3	4.4	.63	.82	83	91
24	9.9	3.6	.70	.01	10	6.4	3.6	5.5	.85	1.6	82	250
25	7.3	4.2	.60	.01	10	5.7	3.2	3.2	1.8	2.2	81	123
26	5.1	4.5	.53	.00	9.0	5.4	2.6	1.3	3.2	1.6	143	101
27	4.6	3.1	.46	.00	8.0	5.6	2.5	1.4	1.6	1.6	113	87
28	4.8	2.0	.39	.00	6.8	12	2.6	1.2	.60	1.2	1430	78
29	4.9	1.4	.34	.00	---	18	2.5	1.7	.30	1.3	306	74
30	6.4	1.3	.30	.00	---	10	2.5	5.4	.60	2.4	181	96
31	7.8	---	.25	.00	---	6.3	---	3.0	---	5.2	243	---
TOTAL	138.5	106.2	41.67	1.67	103.27	309.4	189.1	95.6	32.60	234.26	10823.0	3734
MEAN	4.47	3.54	1.34	.054	3.69	9.98	6.30	3.66	1.09	7.56	349	124
MAX	8.2	8.1	2.1	.20	10	18	14	6.7	3.2	183	6570	553
MIN	2.0	1.3	.25	.00	.00	2.5	1.2	.30	.00	.00	3.4	50
CFSM	.04	.03	.01	.000	.03	.09	.05	.03	.009	.06	2.96	1.05
IN.	.04	.03	.01	.00	.03	.10	.05	.03	.01	.07	3.41	1.18
AC-FT	278	211	83	3.3	205	614	316	190	65	465	21470	7410

CAL YR 1976	TOTAL	19209.27	MEAN 52.5	MAX 1330	MIN .25	CFSM .45	IN 6.65	AC-FT 28100
WTR YR 1977	TOTAL	15779.27	MEAN 43.2	MAX 6570	MIN .00	CFSM .37	IN 4.97	AC-FT 31300

IOWA RIVER BASIN

05451900 RICHLAND CREEK NEAR HAVEN, IA

LOCATION.--Lat 41°53'58", long 92°28'27", in SE1/4 NE1/4 sec.21, T.92 N., R.14 W., Tama County, Hydrologic Unit 07080208, on right bank 5 ft (1 m) upstream from bridge on county highway, 0.6 mi (1.0 km) northeast of Haven, and 2.0 mi (4.5 km) upstream from mouth.

DRAINAGE AREA.--86.1 mi² (145 km²).

PERIOD OF RECORD.--October 1949 to current year.

REVISED RECORDS.--WSP 1708: 1950-55, 1956 (M), 1957, 1958 (M), 1959.

GAGE.--Water-stage recorder. Datum of gage is 788.69 ft (240.393 m) above mean sea level. Prior to Oct. 1, 1971, at datum 10 ft (3.05 m) higher.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year.

COOPERATION.--Six discharge measurement furnished by Corps of Engineers.

AVERAGE DISCHARGE.--20 years, 32.8 ft³/s (0.929 m³/s), 7.94 in/yr (202 mm/yr), 23,760 acre-ft/yr (29.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,000 ft³/s (198 m³/s) May 28, 1974, gage height, 24.00 ft (7.315 m); no flow Jan. 22 to Feb. 2, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1918 reached a stage of 24.3 ft (7.41 m), discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28.3 m³/s) and maximum ("):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)
Aug. 16	1300	5,350 152	23.03 7.020	Aug. 28	1500	2,150 60.9	19.50 5.944

No flow Jan. 22 to Feb. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.99	1.7	.68	.07	.00	9.3	2.1	.61	1.0	7.1	.25	74
2	.92	1.4	.60	.06	.00	10	2.8	.63	.70	.88	.44	30
3	.98	1.3	.58	.05	.01	9.1	2.8	.75	.62	.60	.36	25
4	1.1	1.2	.60	.05	.01	9.0	3.3	1.1	.63	.29	.34	43
5	1.9	1.1	.62	.04	.02	5.0	4.6	.41	.54	.07	.51	20
6	1.6	1.0	.60	.04	.02	2.2	2.8	5.0	.44	.01	1.4	16
7	1.2	1.0	.62	.04	.03	1.5	2.3	4.2	.43	3.1	.55	18
8	1.3	.99	.64	.02	.05	2.2	1.8	1.6	.57	1.2	.72	13
9	1.0	1.0	.62	.03	.06	4.4	1.7	.86	.48	.26	.16	12
10	.92	1.0	.60	.03	.08	3.5	1.7	.74	.40	.20	4.6	8.4
11	.94	.93	.70	.03	.11	10	1.6	.56	.42	.39	1.9	5.2
12	.93	.86	.68	.02	.15	16	1.5	.56	.35	.14	1.0	4.7
13	.89	.86	.74	.02	.23	5.6	1.6	.62	.36	.15	.50	4.0
14	.89	.86	.61	.02	.37	3.6	1.7	.45	.31	.09	.28	3.2
15	1.1	.86	.56	.02	.60	3.2	1.8	.45	.28	.18	132	2.6
16	1.2	.86	.50	.02	.90	2.5	1.8	.50	.27	.53	2890	3.0
17	1.1	.89	.46	.01	1.4	2.7	1.9	.56	.32	.57	120	17
18	1.1	.95	.42	.01	2.2	5.7	1.7	.54	.20	.68	46	475
19	1.9	.98	.38	.01	3.3	4.4	1.5	.50	.15	.62	31	118
20	1.6	1.0	.35	.01	4.7	3.1	1.5	.61	.11	.38	25	60
21	1.3	1.1	.32	.01	5.6	4.4	2.5	.89	.21	.32	29	43
22	1.2	.92	.28	.00	9.0	3.1	1.9	.80	.19	.28	20	34
23	1.2	.86	.26	.00	10	2.8	1.4	.57	.30	.28	17	36
24	1.2	.84	.22	.00	9.3	2.5	1.5	.56	.31	.38	15	173
25	1.2	.90	.20	.00	8.9	2.1	1.2	.56	.35	.26	14	57
26	1.2	.90	.18	.00	8.6	2.3	.84	.62	1.6	.25	295	42
27	1.2	.82	.16	.00	9.0	2.3	.57	.57	.50	.27	37	34
28	1.1	.84	.13	.00	9.8	3.0	.88	.58	.21	.32	1020	29
29	1.2	.82	.12	.00	---	5.6	.85	6.5	.04	.32	146	28
30	1.4	.76	.11	.00	---	3.1	.82	14	124	.29	55	44
31	1.8	---	.09	.00	---	2.0	---	4.4	---	.26	298	---
TOTAL	37.76	29.50	13.62	.62	85.44	145.2	53.76	91.50	170.84	20.44	5280.14	1472.1
MEAN	1.22	.90	.44	.020	3.05	4.68	1.79	2.95	5.69	.66	170	49.1
MAX	1.9	1.7	.74	.07	10	16	4.6	41	124	7.1	2880	475
MIN	.89	.76	.09	.00	.00	1.5	.62	.45	.04	.01	.26	2.6
CFSM	.02	.02	.008	.008	.05	.08	.03	.05	.10	.01	3.03	.88
IN.	.03	.02	.01	.00	.06	.10	.04	.06	.11	.01	3.50	.98
AC-FT	75	59	27	1.2	169	288	107	181	339	41	10470	2920

CAL YR 1976 TOTAL	8732.92	MEAN 23.9	MAX 688	MIN .09	CFSM .43	IN 5.79	AC-FT 17320
VTR YR 1977 TOTAL	7400.92	MEAN 20.3	MAX 2880	MIN .00	CFSM .35	IN 4.91	AC-FT 14680

05482000 SALT CREEK NEAR ELBERON, IA

LOCATION.--Lat 41°57'51", long 92°18'47", in NW1/4 NW1/4 sec.36, T.83 N., R.13 W., Tama County, Hydrologic Unit 07080208, near center of span on downstream side of bridge on U.S. Highway 30, 2.0 mi (3.2 km) upstream from Hog Run, 3.0 mi (4.8 km) south of Elberon, and 9.0 mi (14.5 km) upstream from mouth.

DRAINAGE AREA.--201 mi² (521 km²).

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1946.

GAGE.--Water-stage recorder. Datum of gage is 781.58 ft (238.226 m) above mean sea level (Iowa Highway Commission bench mark). Prior to Oct. 15, 1945, and June 14, 1947, to Feb. 10, 1949, nonrecording gage on upstream side of bridge at present datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--32 years, 121 ft³/s (3.427 m³/s), 8.18 in/yr (208 mm/yr), 87,660 acre-ft/yr (108 km³/yr); median of yearly mean discharges, 100 ft³/s (2.83 m³/s), 8.0 in/yr (173 mm/yr), 72,400 acre-ft/yr (89.3 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 35,000 ft³/s (991 m³/s) June 13, 1947, gage height, 17.6 ft (5.36 m) from rating curve extended above 17,000 ft³/s (481 m³/s); maximum gage height, 17.78 ft (5.419 m) July 18, 1959; minimum daily discharge, 0.85 ft³/s (0.024 m³/s) Jan. 31, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 16, 1944, reached a stage of 19.9 ft (6.07 m), from floodmark at downstream side of bridge, discharge, about 30,000 ft³/s (850 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s (42.5 m³/s) and maximum ("):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)
Aug. 16	0815	3,010 85.2	14.63 4.459	Aug. 28	1345	*3,110 88.1	*14.71 4.484
Aug. 28	0945	2,190 62.0	13.64 4.218	Sept. 18	1615	2,080 58.9	13.71 4.179

Minimum daily discharge, 0.85 ft³/s (0.024 m³/s) Jan. 31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.6	9.7	4.6	1.1	.92	16	14	7.2	4.3	4.1	2.7	123
2	7.6	9.0	4.1	1.2	1.5	18	18	7.4	3.8	3.3	2.6	67
3	7.4	8.4	3.6	1.2	1.8	21	17	6.9	3.6	3.5	2.6	49
4	7.7	7.9	3.3	1.2	1.9	24	19	6.7	3.5	4.0	2.8	47
5	12	7.4	3.1	1.2	1.9	24	25	6.5	3.5	3.1	3.3	37
6	11	9.0	3.2	1.2	1.8	24	18	6.3	3.3	2.9	6.1	30
7	8.5	7.7	3.0	1.3	2.0	27	18	6.1	3.1	3.9	5.1	25
8	8.1	7.2	3.0	1.4	2.5	31	14	5.9	3.7	4.0	197	23
9	8.4	9.0	2.9	1.4	3.0	36	13	5.7	3.8	3.2	43	20
10	8.1	9.2	2.7	1.4	3.2	35	11	5.5	3.5	2.9	26	16
11	7.8	7.7	2.5	1.3	3.5	21	10	5.3	3.6	3.4	11	14
12	7.7	9.6	2.6	1.3	4.5	98	9.2	5.1	3.5	3.4	7.4	13
13	7.3	7.9	2.5	1.3	5.2	83	9.3	4.9	3.2	2.9	6.2	14
14	7.3	9.6	2.4	1.3	5.5	49	9.9	4.8	3.2	2.8	5.7	13
15	7.4	9.4	2.3	1.2	5.8	34	11	4.8	3.2	2.5	51	12
16	7.0	12	2.2	1.1	6.2	23	10	4.7	3.2	14	1870	14
17	7.5	9.3	2.2	1.1	6.2	17	9.9	4.7	3.0	6.4	158	24
18	8.1	11	2.1	1.1	6.6	22	9.2	4.6	100	5.6	53	1530
19	9.6	11	2.0	1.2	7.4	19	8.4	4.5	19	5.4	30	478
20	10	9.2	2.0	1.2	8.5	16	11	4.7	7.6	3.8	25	220
21	9.2	9.5	1.9	1.1	9.6	22	17	5.6	5.5	3.3	20	155
22	8.1	6.6	1.8	1.0	11	17	18	5.0	5.3	3.4	15	138
23	9.2	9.1	1.3	.98	15	17	12	7.3	4.8	2.9	12	127
24	9.9	8.8	1.3	1.0	20	14	9.8	5.5	5.3	3.0	10	446
25	9.3	8.6	1.4	.92	15	13	8.5	4.8	5.0	3.0	9.1	277
26	8.7	8.5	1.3	.99	15	13	8.2	4.7	4.3	2.6	933	184
27	8.3	5.6	1.2	.95	15	14	7.7	8.2	3.8	2.5	181	145
28	8.2	4.7	1.2	1.0	16	18	7.4	6.2	3.6	3.1	2220	129
29	8.7	4.6	1.1	1.0	---	27	7.4	4.9	3.3	8.3	411	115
30	10	4.6	1.1	.96	---	21	7.4	5.5	5.1	3.7	164	105
31	12	---	1.1	.85	---	18	---	5.3	---	4.7	130	---
TOTAL	267.3	251.8	71.1	35.42	196.52	830	367.3	178.3	233.6	125.6	6613.6	4569
MEAN	8.62	8.39	2.29	1.14	7.02	26.8	12.2	5.75	7.79	4.05	213	153
MAX	12	12	4.6	1.4	20	95	26	8.2	100	14	2220	1530
MIN	7.0	4.6	1.1	.85	.92	13	7.4	4.5	3.1	2.5	2.6	.76
CFSM	.04	.04	.01	.006	.04	.13	.05	.04	.04	.02	1.06	.85
IN.	.05	.05	.01	.01	.04	.15	.07	.03	.04	.02	1.22	.85
AC-FT	530	499	141	70	390	1650	729	354	463	249	13120	9100

CAL YR 1976 TOTAL 25444.50 MEAN 69.5 MAX 1790 MIN 1.1 CFSM .35 IN 4.71 AC-FT 50470
WTR YR 1977 TOTAL 13759.54 MEAN 37.7 MAX 2220 MIN .85 CFSM .19 IN 2.55 AC-FT 27290

IOWA RIVER BASIN

05452200 WALNUT CREEK NEAR HARTWICK, IA

LOCATION.--Lat 41°50'08", long 92°23'10", in SE1/4 SW1/4 sec.8, T.81 N., R.13 W., Poweshiek County, Hydrologic Unit 07080200, on left bank 5 ft (2 m) upstream from bridge on county highway V21, 1.2 mi (1.9 km) downstream from North Walnut Creek, 4.0 mi (6.4 km) northwest of Hartwick, and 8.5 mi (13.6 km) upstream from mouth.

DRAINAGE AREA.--70.9 mi² (184 km²).

PERIOD OF RECORD.-- October 1949 to current year.

REVISED RECORDS.--WSP 1950: 1950 (P), 1951-57.

GAGE.--Water-stage recorder. Datum of gage is 785.99 ft (239.783 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--28 years, 40.8 ft³/s (1.155 m³/s), 7.81 in/yr (198 mm/yr), 29,566 acre-ft/yr (36.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,800 ft³/s (193 m³/s) Aug. 16, 1977, gage height, 16.30 ft (4.968 m), from rating curve extended above 2,600 ft³/s (73.6 m³/s) on basis of contracted-opening and flow-over-channel-measurement measurement of peak flows no flow at times for most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of 17.7 ft (5.39 m), from information by local residents, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28.3 m³/s) and maximum (""):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)
Aug. 16	0900	*6,500 193	*16.30 4.968	Sept. 18	0200	2,310 65.4	14.20 4.328
Aug. 20	0615	1,290 36.5	12.18 3.712				

No flow Jan. 20 to Feb. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	1.1	.25	.03	.00	4.0	5.4	.75	.38	9.0	.08	38
2	1.7	1.2	.20	.03	.00	3.5	5.0	.57	.26	.85	.07	25
3	1.7	1.0	.17	.03	.01	3.0	3.8	.69	.31	1.2	.10	19
4	2.0	.69	.15	.03	.01	2.5	3.9	1.7	.33	1.0	.08	20
5	4.0	.70	.12	.03	.02	2.2	3.5	26	.35	.59	.22	20
6	2.2	.83	.10	.03	.02	2.1	3.4	2.3	.29	.52	.20	16
7	2.0	.51	.08	.03	.03	2.3	3.1	1.8	.23	.95	.23	15
8	1.7	.63	.07	.03	.05	3.5	2.7	1.0	.43	.97	116	17
9	1.6	1.1	.06	.03	.06	4.5	2.5	.93	.17	.25	.80	12
10	1.2	.74	.04	.02	.09	6.0	2.1	.75	.16	.21	12	8.0
11	1.2	.72	.03	.02	.12	8.1	1.9	.57	.13	.32	4.8	7.5
12	1.1	.71	.02	.02	.16	20	1.7	.45	.12	.18	2.5	7.7
13	.73	.77	.01	.02	.21	10	1.5	.45	.11	.15	.79	7.4
14	.68	.74	.01	.02	.35	9.7	1.4	.45	.19	.25	.57	5.8
15	.67	.80	.01	.02	.52	9.7	1.0	.45	.25	.12	9.4	5.1
16	.67	.85	.01	.01	.80	10	1.0	.45	.26	111	1940	5.3
17	.67	.90	.02	.01	1.4	11	.91	.35	.31	2.8	112	91
18	.76	.86	.02	.01	2.1	14	.81	.40	.60	.74	62	892
19	.85	.80	.02	.01	3.5	13	.74	.35	.35	.69	48	101
20	.92	.68	.03	.00	5.0	11	.63	.38	.16	.39	39	54
21	.82	.60	.04	.00	6.0	9.9	.80	1.3	.11	.15	40	42
22	1.0	.54	.04	.00	7.5	9.9	.75	1.5	.13	.13	32	31
23	.96	.58	.04	.00	7.3	8.4	.63	1.5	.15	.10	27	22
24	.87	.62	.04	.00	7.2	7.6	.40	1.0	.53	.18	23	104
25	.81	.60	.04	.00	7.0	6.2	.38	.93	3.2	.11	22	42
26	.85	.57	.04	.00	5.0	6.2	.45	.69	1.1	.10	39	29
27	.79	.52	.04	.00	5.0	8.4	.51	.51	1.1	.08	37	19
28	.68	.44	.04	.00	4.5	8.4	.45	.51	.79	.10	437	18
29	.81	.35	.04	.00	---	7.8	.57	.51	.35	.16	81	16
30	1.2	.30	.04	.00	---	6.6	.63	.51	10	.12	46	44
31	1.3	---	.03	.00	---	5.6	---	.42	---	.05	47	---
TOTAL	38.24	21.45	1.85	.43	64.95	235.1	52.66	50.27	27.61	133.36	3229.04	1751.8
MEAN	1.23	.72	.060	.014	2.32	7.58	1.76	1.62	.92	4.30	104	58.4
MAX	4.0	1.2	.25	.03	7.5	20	5.4	26	10	111	1940	892
MIN	.67	.30	.01	.00	.00	2.1	.38	.35	.11	.05	.07	5.1
CFSM	.02	.01	.001	.000	.03	.11	.03	.02	.01	.06	1.47	.82
IN	.02	.01	.00	.00	.03	.12	.03	.03	.01	.07	1.69	.92
AC-FT	76	43	3.7	.9	129	466	104	100	55	265	6400	2470

CAL YR 1976	TOTAL	10501.65	MEAN 29.0	MAX 1340	MIN .01	CFSM .41	IN 5.56	AC-FT 21030
WTR YR 1977	TOTAL	8605.76	MEAN 15.4	MAX 1940	MIN .00	CFSM .22	IN 2.94	AC-FT 11120

05453000 BIG BEAR CREEK AT LADORA, IA

LOCATION.--Lat 41°44'58", long 92°10'55", in SW1/4 SW1/4 sec.7, T.80 N., R.11 W., Iowa County, Hydrologic Unit 07080208, on left bank 10 ft (3 m) downstream from bridge on county highway V52, 0.4 mi (0.6 km) south of Ladora, 1.2 mi (1.9 km) downstream from Coats Creek, 2.8 mi (4.5 km) upstream from Little Bear Creek, and 9.1 mi (13.0 km) upstream from mouth.

DRAINAGE AREA.--189 mi² (490 km²).

PERIOD OF RECORD.--October 1945 to current year. Prior to October 1966, published as Bear Creek at Ladora.

REVISED RECORDS.--WSP 1308: 1947 (M). WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 754.94 ft (230.106 m) above mean sea level. Prior to June 26, 1946, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--32 years, 115 ft³/s (3.257 m³/s), 8.26 in/yr (210 mm/yr), 83,320 acre-ft/yr (103 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,500 ft³/s (297 m³/s) Mar. 30, 1960, gage height, 14.60 ft (4.450 m); minimum gage height, 15.32 ft (4.670 m) Sept. 18, 1977; no flow for several days in 1956 and 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (56.6 m³/s) and maximum (---)

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Aug. 16	1845	4,650 132	12.39 3.778
Sept. 18	0745	8,260 234	15.32 4.670

No flow Jan. 19, to Feb. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.2	7.0	1.6	.09	.00	9.2	12	4.0	4.3	33	3.0	108
2	4.1	6.0	1.4	.08	.00	10	13	3.7	2.9	7.3	2.6	64
3	4.6	6.2	1.2	.07	.00	11	15	3.8	2.5	4.2	1.8	47
4	4.1	4.8	1.1	.06	.01	12	15	5.9	2.3	3.5	1.7	47
5	7.6	4.6	1.0	.05	.01	13	20	100	2.2	2.4	2.1	39
6	6.7	7.2	.91	.05	.02	14	16	21	1.8	1.8	4.1	35
7	6.9	5.7	.84	.04	.03	15	12	19	1.5	2.3	4.2	30
8	6.2	4.2	.82	.04	.04	17	11	13	2.1	5.7	288	32
9	5.7	5.5	.80	.03	.05	19	9.7	9.7	2.0	4.1	191	28
10	5.5	5.4	.78	.03	.08	17	9.2	8.2	1.6	3.4	31	24
11	4.6	4.2	.75	.02	.11	22	8.4	6.5	1.9	3.0	14	20
12	4.4	4.3	.73	.02	.16	57	7.3	4.9	1.5	2.9	8.7	18
13	4.1	4.7	.73	.02	.22	26	6.9	3.9	1.3	2.9	6.4	19
14	3.9	4.6	.70	.01	.32	18	6.7	3.7	1.2	1.9	4.7	17
15	5.2	4.9	.66	.01	.45	14	6.9	4.0	1.1	1.6	4.4	15
16	4.7	5.0	.60	.01	.66	12	6.8	4.0	1.1	456	3490	14
17	4.4	5.4	.50	.01	.96	11	5.9	4.2	1.4	74	397	267
18	5.1	5.4	.45	.01	1.4	12	5.7	4.1	7.3	22	142	6530
19	5.4	6.5	.42	.00	2.0	16	5.5	3.9	3.6	12	93	924
20	5.7	6.6	.40	.00	2.8	12	5.3	4.0	2.0	7.8	71	357
21	5.0	6.5	.35	.00	4.1	13	8.3	5.7	1.6	5.7	64	259
22	5.5	4.0	.30	.00	5.1	14	9.3	18	1.6	4.7	47	214
23	5.7	4.3	.27	.00	6.6	14	6.3	8.2	2.5	3.6	35	191
24	5.7	4.2	.24	.00	6.8	11	4.6	6.1	19	4.5	26	244
25	5.6	4.0	.21	.00	6.0	10	3.7	5.7	20	3.9	22	195
26	5.4	3.4	.19	.00	6.5	9.4	3.5	4.0	16	2.6	70	156
27	5.4	2.9	.17	.00	7.3	10	3.3	3.2	5.1	2.3	58	136
28	4.9	2.5	.15	.00	8.3	13	3.7	3.3	3.3	2.1	798	118
29	5.3	2.0	.13	.00	---	26	3.7	3.3	2.1	2.4	202	110
30	5.7	1.8	.11	.00	---	20	3.9	3.0	14	2.1	100	105
31	6.6	---	.10	.00	---	14	---	8.5	---	2.4	75	---
TOTAL	165.8	142.8	18.61	.65	58.02	491.6	248.6	300.5	130.7	680.1	6257.7	10463
MEAN	5.35	4.76	.60	.021	2.07	15.9	8.29	9.69	4.36	22.2	202	349
MAX	8.7	7.2	1.6	.09	8.3	57	20	100	20	456	3490	6530
MIN	3.9	1.8	.10	.00	.00	9.2	3.3	3.0	1.1	1.6	1.7	14
CFSM	.03	.03	.003	.000	.01	.08	.04	.05	.02	.12	1.07	1.86
IN.	.03	.03	.00	.00	.01	.10	.05	.06	.03	.14	1.23	2.06
AC-FT	329	283	37	1.3	115	975	493	596	259	1360	12410	20750

CAL YR 1976	TOTAL	28279.71	MEAN 77.3	MAX 3060	MIN .10	CFSM .41	IN 5.57	AC-FT 56090
WTR YR 1977	TOTAL	18966.08	MEAN 52.0	MAX 6530	MIN .00	CFSM .28	IN 3.73	AC-FT 37620

IOWA RIVER BASIN

05453100 IOWA RIVER AT MARENGO, IA

LOCATION.--Lat 41°48'41", long 92°03'42", in SW1/4 NE1/4 sec.24, T.81 N., R.11 W., Iowa County, Hydrologic Unit 07080208, on right bank 10 ft (3 m) downstream from abandoned highway bridge, 0.7 mi (1.1 km) downstream from Big Bear Creek, 0.8 mi (1.3 km) north of Marengo, 4.9 mi (7.9 km) upstream from Hilton Creek, and at mile 139.4 (224.3 km).

DRAINAGE AREA.--2,794 mi² (7,236 km²).

PERIOD OF RECORD.--October 1956 to current year. Monthly discharge only for some periods, published in WSP 1728.

REVISED RECORDS.--WSP 1858: 1957.

GAGE.--Water-stage recorder. Datum of gage is 720.52 ft (219.614 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeters at station.

COOPERATION.--Nineteen discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--21 years, 1,664 ft³/s (47.12 m³/s), 8.09 in/yr (205 mm/yr), 1,205,000 acre-ft/yr (1,490 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,800 ft³/s (872 m³/s) Mar. 31, 1960, gage height, 19.21 ft (5.855 m); maximum gage height, 19.79 ft (6.032 m) July 12, 1969; minimum daily discharge, 24 ft³/s (0.68 m³/s), Jan. 29 to Feb. 1, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft³/s (170 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Aug. 16	2200	8,080 229	15.49 4.721	Sept. 19	0130	*19,100 428	*17.39 5.300

Minimum daily discharge, 24 ft³/s (0.68 m³/s) Jan. 29 to Feb. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	117	148	108	43	24	200	292	188	220	190	75	2300
2	114	147	100	42	25	218	292	177	162	146	75	2010
3	109	141	96	42	26	230	289	171	142	100	73	1750
4	107	139	90	41	27	234	313	179	127	88	73	1550
5	126	132	88	40	31	234	349	273	120	81	74	1440
6	133	130	84	38	33	226	355	282	115	77	78	1290
7	130	128	80	37	35	251	336	254	112	78	84	1160
8	122	120	75	36	37	278	322	252	112	78	253	1060
9	116	121	71	34	39	298	307	224	109	84	602	1050
10	111	120	68	33	42	324	293	203	104	89	316	1110
11	111	116	65	32	50	358	278	197	100	89	369	1090
12	112	105	63	31	58	549	260	201	100	88	519	1070
13	109	116	62	30	61	559	245	197	98	85	411	989
14	108	110	60	29	63	482	236	184	96	81	357	916
15	108	110	59	30	66	449	230	175	92	76	324	875
16	110	103	58	29	68	422	232	163	89	362	6000	870
17	110	109	57	28	71	401	226	158	88	452	5740	1300
18	108	122	57	28	75	406	213	152	88	176	4630	11400
19	122	146	57	28	79	379	206	146	122	125	4390	10000
20	119	132	56	28	86	355	202	145	125	106	4770	4130
21	119	136	56	28	92	338	223	145	109	95	3360	2680
22	122	137	54	28	104	331	231	169	111	88	1900	2010
23	122	123	53	28	124	320	232	166	104	86	1430	1680
24	122	129	52	27	162	299	232	151	115	88	1160	1700
25	124	134	51	28	184	283	233	142	106	88	995	2120
26	127	136	49	27	176	267	227	139	131	92	985	2130
27	129	115	48	27	180	276	238	137	111	86	1650	1870
28	131	94	47	26	196	287	242	132	93	82	2960	1600
29	133	112	46	24	---	332	223	130	88	81	4630	1410
30	140	116	45	24	---	315	205	126	127	79	4130	1290
31	147	---	44	24	---	300	---	177	---	78	2640	---
TOTAL	3718	3727	1999	970	2213	10201	7762	5535	3416	3594	55053	65870
MEAN	120	124	64.5	31.3	79.0	329	259	179	114	116	1776	2196
MAX	147	148	108	43	196	559	355	282	220	452	6000	11400
MIN	107	94	44	24	24	200	202	126	89	76	73	870
CFSM	.04	.04	.02	.01	.03	.12	.09	.06	.04	.04	.64	.79
IN.	.05	.05	.03	.01	.03	.14	.10	.07	.05	.05	.73	.86
AC-FT	7370	7390	3970	1920	4390	20230	15400	10980	6780	7130	109200	130700

CAL YR 1976	TOTAL	412299	MEAN	1127	MAX	15700	MIN	44	CFSM	.40	IN	5.49	AC-FT	817800
WTR YR 1977	TOTAL	184058	MEAN	449	MAX	11400	MIN	24	CFSM	.16	IN	2.18	AC-FT	325400

IOWA RIVER BASIN

65

05483510 CORALVILLE LAKE NEAR CORALVILLE, IA

LOCATION.--Lat 41°43'29", long 91°31'40", in SW1/4 NE1/4 sec.22, T.80 N., R.6 W., Johnson County, Hydrologic Unit 07080208, at outlet works at left end of Coralville Dam on Iowa River, 2.3 mi (3.7 km) upstream from Rapid Creek, 4.3 mi (6.9 km) northeast of Coralville Post Office and at mile 83.3 (134.0 km).

DRAINAGE AREA.--3,115 mi² (8,067 km²).

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam completed in 1957. Storage began in September 1958. Releases controlled by three gates, 8.33 ft (2.539 m) wide and 20 ft (6 m) high, into forechamber of 23-ft (7 m) diameter concrete conduit through dam. Inlet invert elevation at 545.0 ft (197 m). No dead storage. Maximum design discharge through gates is 20,000 ft³/s (566 m³/s). Ungated spillway is concrete overflow section 500 ft (152 m) in length at elevation 712 ft (217 m) above mean sea level, contents, 459,000 acre-ft (578 hm³). Reservoir is used for flood control, low-flow augmentation, conservation and recreation. Normal operation will maintain an elevation of 670 ft (204 m) Feb. 15 to June 15, 680 ft (207 m) June 15 to Sept. 25, 693 ft (208 m) Sept. 25 to Dec. 15, and 680 ft (207 m) December 15 to Feb. 1 with a minimum release of 150 ft³/s (4.25 m³/s) and maximum release of 10,000 ft³/s (283 m³/s) Dec. 15 to May 1 and 6,000 ft³/s (170 m³/s) May 1 to Dec. 15. Minimum observed elevation on Jan. 15, 1975 is approximate due to freezing of gages.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 472,000 acre-ft (592 hm³) July 21, 1959, elevation, 711.85 ft (216.972 m); minimum daily contents, 455 acre-ft (0.562 hm³) Jan. 15, 1975; minimum observed elevation, 658.77 ft (200.793 m) Mar. 10, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 105,000 acre-ft (129 hm³) Sept. 22, elevation, 689.33 ft (210.108 m); minimum daily contents, 15,700 acre-ft (19.4 hm³) Apr. 30, May 1-3; minimum observed elevation, 670.38 ft (204.332 m) May 1.

Capacity table (elevation, in feet, and contents, in acre-ft)

685	5,000	683	55,000	700	232,000
670	10,600	685	69,000	705	327,000
675	21,000	690	108,000	710	427,000
680	40,300	695	162,000	712	469,000

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42000	41000	40200	34500	27100	27100	33400	15700	20000	24300	33800	65400
2	42000	41000	40200	34200	26800	27600	32100	15700	20300	24800	33800	63600
3	42000	41000	40100	34000	26600	28100	30800	15700	20400	25200	33800	62500
4	42000	41000	40100	33800	26300	28700	29500	15800	20500	25600	33900	62300
5	42000	41000	40000	33500	26100	29300	28300	16000	20600	25900	33900	61900
6	42100	40900	39800	33300	25800	29900	27000	16300	20600	26200	34000	61700
7	42100	40900	39700	33100	25500	30700	25900	16500	20600	26400	34000	61400
8	42000	40900	39500	32900	25300	31400	24800	16600	20700	26400	41000	61500
9	42000	41000	39300	32600	25100	32300	23800	16700	20700	26500	43700	63500
10	41900	40900	39100	32400	24800	33300	22800	16800	20700	26500	45100	63400
11	41900	40900	38800	32100	24700	34500	21800	16800	20700	26500	46100	63600
12	41800	40800	38600	31900	24700	35900	20700	16800	20700	26400	46900	63700
13	41700	40800	38400	31700	24700	37300	19600	16800	20700	26500	47800	63300
14	41600	40700	38200	31400	24700	38600	18700	16800	20700	26600	49200	62900
15	41500	40600	38000	31200	24800	39700	18000	16900	20700	26700	51000	63000
16	41500	40600	37800	31000	24800	40700	17600	16900	20700	26900	50500	62100
17	41400	40500	37600	30700	24800	41600	17300	17000	20700	27300	49100	67900
18	41300	40400	37400	30500	24800	42400	17000	17200	20700	27700	47800	84400
19	41500	40400	37200	30200	24800	42800	16700	17300	20800	28400	47700	98500
20	41400	40400	37000	30000	24800	42900	16500	17700	20900	29600	49800	101000
21	41400	40400	36800	29800	24900	43100	16500	18100	21000	29600	51300	105000
22	41300	40400	36600	29500	25100	43100	16800	18500	21100	29600	51200	105000
23	41200	40400	36400	29300	25400	43000	16900	18700	21200	29600	51200	105000
24	41200	40400	36100	29000	25600	42800	16800	18900	21200	32200	5200	102000
25	41200	40400	35900	28800	25900	42100	16600	19000	21400	33200	#200	101000
26	41100	40400	35700	28600	26100	40700	16300	19200	21500	33300	66200	99100
27	41100	40300	35500	28300	26400	39500	16000	19400	21600	33400	63000	95500
28	41100	40300	35300	28100	26700	38600	15800	19500	21700	33600	62400	92800
29	41000	40300	35100	27800	---	37600	15800	19600	21900	33700	62500	89900
30	41000	40300	34900	27600	---	36100	15700	19700	23800	33700	64600	95700
31	41000	---	34700	27300	---	34700	---	19800	---	---	33800	66500
MAX	42100	41000	40200	34500	27100	43100	33400	19800	23800	33800	81300	105000
MIN	41000	40300	34700	27300	24700	27100	15700	16700	20000	24300	33800	61400
*	679.99	679.81	678.02	675.19	675.05	677.22	670.48	672.20	674.88	677.36	684.12	686.47
*	-800	-700	-5,600	-7,400	-800	+8,000	-19,000	+4,000	+4,000	+10,000	+32,700	+35,200

CAL YR 1976.....MAX 155,000 MIN 10,700 --10,800
WTR YR 1977.....MAX 105,000 MIN 15,700 --55,100

* Elevation, in feet, at end of month.
* Change in contents, in acre-feet.

IOWA RIVER BASIN

06454000 RAPID CREEK NEAR IOWA CITY, IA

LOCATION.--Lat 41°41'19", long 91°29'15", in NE1/4 NE1/4 sec.36, T.80 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on left bank 80 ft (24 m) upstream from bridge on State Highway 1, 3.5 mi (5.6 km) northeast of Iowa City, and 4.7 mi (7.6 km) upstream from mouth.

DRAINAGE AREA.--28.3 mi² (85.5 km²).

PERIOD OF RECORD.--October 1937 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1558: 1941 (M), 1943 (P), 1944 (M), 1946. WSP 1709: 1951 (P), 1952. WRD IOWA 1987: Drainage area.

GAGE.--Water-stage recorder and concrete control with sharp-crested weir. Datum of gage is 673.72 ft (205.350 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--40 years, 15.3 ft³/s (0.433 m³/s), 8.21 in/yr (209 mm/yr), 11,080 acre-ft/yr (13.7 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,100 ft³/s (173 m³/s) May 23, 1965, gage height, 14.10 ft (4.298 m); from contracted-opening measurement of peak flow; maximum gage height, 14.93 ft (4.561 m) July 17, 1972; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (17.0 m³/s) and maximum (°):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Aug. 8	0845	1,230 34.8	10.31 3.142	Sept. 18	0400	1,940 54.9	11.56 3.523
Aug. 16	0500	*4,000 113	*13.86 4.221				

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.01	.14	.00	.00	.00	1.3	2.4	2.3	.00	7.8	.02	7.8
2	.01	.10	.00	.00	.00	1.4	2.4	2.2	.00	2.0	.00	6.9
3	.01	.09	.00	.00	.00	2.9	1.7	2.1	.00	.89	.05	6.6
4	.01	.09	.00	.00	.00	2.0	4.0	7.0	.00	.66	.06	6.1
5	.20	.08	.00	.00	.00	.90	6.5	10	.00	.29	.03	4.6
6	.16	.07	.00	.00	.00	.95	3.7	1.8	.00	.12	.04	3.6
7	.14	.07	.00	.00	.00	1.0	2.9	1.6	.00	.03	.20	2.9
8	.10	.06	.00	.00	.05	3.0	2.1	.98	.00	.00	295	2.6
9	.07	.07	.00	.00	.70	2.2	1.7	.80	.00	.00	42	2.1
10	.05	.07	.00	.00	3.6	1.7	1.3	.67	.00	.00	21	1.7
11	.03	.10	.00	.00	18	6.1	1.0	.56	.67	.00	14	1.3
12	.02	.08	.00	.00	3.0	21	.89	.81	2.5	.00	11	1.3
13	.01	.07	.00	.00	.80	4.4	.84	.44	.89	.00	10	1.9
14	.01	.06	.00	.00	.25	2.1	.84	.34	.31	.00	14	1.7
15	.01	.07	.00	.00	.08	1.6	.93	.31	.14	.00	5.8	1.2
16	.01	.06	.00	.00	.05	.89	.84	.21	.02	.00	1260	1.6
17	.01	.07	.00	.00	.04	.71	1.6	.18	.00	.00	49	59
18	.07	.09	.00	.00	.03	.67	1.6	.62	.00	.76	27	762
19	.17	.14	.10	.00	.04	.62	1.4	.93	.00	.93	19	74
20	.09	.17	.82	.00	.05	.62	18	.34	.00	.23	15	44
21	.04	.16	.09	.00	.17	.93	49	.31	.00	.01	12	33
22	.01	.14	.00	.00	3.3	1.2	17	.23	.00	.00	9.2	27
23	.01	.09	.00	.00	18	1.6	12	.12	.00	.00	7.3	24
24	.01	.09	.00	.00	9.0	1.1	8.9	.04	.00	.93	6.0	93
25	.01	.11	.00	.00	1.4	.89	6.9	.01	.00	9.2	4.4	36
26	.01	.10	.00	.00	1.2	.76	5.8	.00	.00	1.6	6.0	28
27	.01	.05	.00	.00	1.4	.98	4.9	.00	.00	.62	4.9	23
28	.01	.00	.00	.00	1.6	.76	4.0	.11	.00	.26	37	20
29	.03	.00	.00	.00	---	18	3.0	.08	.00	.18	20	18
30	.94	.00	.00	.00	---	6.2	2.6	.08	123	.26	13	32
31	.63	---	.00	.00	---	3.3	---	.05	---	.18	10	---
TOTAL	2.80	2.49	1.01	.00	62.66	97.52	166.44	34.92	127.53	110.92	1913.70	1324.6
MEAN	.090	.083	.033	.000	2.24	3.16	5.55	1.13	4.25	3.84	61.7	44.2
MAX	.94	.17	.82	.00	18	21	49	10	123	93	1260	762
MIN	.01	.00	.00	.00	.00	.62	.84	.00	.00	.00	.00	1.2
CFSM	.004	.003	.001	.000	.09	.13	.22	.05	.17	.15	2.44	1.75
IN.	.00	.00	.00	.00	.09	.14	.24	.05	.19	.17	2.81	1.95
AC-FT	5.6	4.9	2.0	.00	124	193	330	69	263	236	3790	2630

CAL YR 1976 TOTAL 1303.34 MEAN 3.56 MAX 89 MIN .00 CFSM .14 IN 1.92 AC-FT 2690
WTR YR 1977 TOTAL 3851.79 MEAN 10.6 MAX 1260 MIN .00 CFSM .42 IN 5.66 AC-FT 7640

05454300 CLEAR CREEK NEAR CORALVILLE, IA

LOCATION.--Lat 41°40'36", long 91°35'55", in NE1/4 SE1/4 sec.1, T.79 N., R.7 W., Johnson County, Hydrologic Unit 07080209, on left bank about 50 ft (15 m) upstream from bridge on county highway, 1.1 mi (1.8 km) west of post office in Coralville, 1.5 mi (2.4 km) downstream from Deer Creek and 2.7 mi (4.3 km) upstream from mouth.

DRAINAGE AREA.--98.1 mi² (254.1 km²).

PERIOD OF RECORD.--October 1952 to current year. Monthly discharge only for some periods, published in WSP 1726.

GAGE.--Water-stage recorder. Datum of gage is 647.48 ft (197.382 m) above mean sea level (levels by Corps of Engineers). Prior to Jan. 7, 1957, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--24 years, 62.1 ft³/s (1.759 m³/s), 8.60 in/yr (218 mm/yr), 44,990 acre-ft/yr (55.5 hm³/yr); median of yearly mean discharges, 46 ft³/s (1.30 m³/s), 6.4 in/yr (163 mm/yr), 33,300 acre-ft/yr (41.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,630 ft³/s (188 m³/s) May 17, 1974, gage height, 13.93 ft (4.246 m); no flow Jan 18-Feb. 4, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28.3 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Aug. 16	0330	*3,940 100	*13.02 3.968	Sept. 18	1300	1,620 45.9	10.62 3.298

No flow Jan. 18-Feb. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	3.7	4.0	.19	.00	117	15	6.0	2.6	42	4.1	37
2	1.6	3.7	3.3	.24	.00	116	15	6.2	2.6	5.6	4.0	26
3	1.6	3.6	2.7	.29	.00	127	14	5.9	2.4	4.2	4.0	34
4	1.8	3.4	2.7	.22	.00	128	23	6.9	3.6	3.4	3.9	32
5	7.2	3.7	2.6	.20	.05	124	29	11	2.5	3.2	3.8	30
6	4.7	3.7	2.3	.19	.11	111	19	8.1	2.1	3.2	3.8	27
7	3.4	3.7	2.4	.21	.12	100	18	6.0	2.0	3.5	3.8	22
8	2.9	4.0	2.2	.19	.13	99	13	5.5	2.3	3.1	662	9.0
9	2.8	3.8	1.6	.20	.13	114	11	4.6	2.2	3.2	186	9.2
10	2.8	3.8	1.5	.21	.14	92	9.3	4.2	2.4	2.6	88	9.3
11	2.7	3.7	1.4	.22	.25	63	8.3	4.0	6.1	2.9	48	9.3
12	2.8	3.7	1.2	.21	.41	80	7.2	3.6	4.0	2.8	32	9.3
13	2.5	3.7	1.1	.19	.70	24	6.9	3.5	2.6	2.6	20	9.3
14	2.5	3.7	.82	.13	1.1	14	7.5	3.3	2.4	2.6	14	9.3
15	2.4	4.2	.73	.12	2.1	12	8.0	3.2	2.1	2.6	16	9.2
16	2.4	4.2	.64	.10	3.0	11	6.7	3.1	1.9	11	1970	9.2
17	2.5	4.6	.57	.05	5.0	9.4	6.0	2.9	2.4	5.0	208	9.9
18	2.6	4.8	.52	.00	8.4	11	5.4	3.2	5.0	3.7	162	1330
19	3.0	5.0	.46	.00	15	11	9.0	2.7	2.9	3.9	111	630
20	2.9	5.0	.40	.00	27	10	21	3.2	1.8	3.3	96	180
21	3.1	5.0	.36	.00	43	13	60	72	1.7	2.7	76	137
22	2.9	4.8	.32	.00	78	15	33	9.8	1.8	2.3	69	96
23	2.9	5.0	.33	.00	194	16	17	5.8	2.5	2.1	60	72
24	2.9	5.2	.32	.00	208	14	13	4.3	17	3.4	49	367
25	2.9	5.0	.28	.00	158	11	11	3.9	4.1	8.9	42	158
26	3.0	5.0	.27	.00	135	10	8.6	3.7	2.4	7.5	38	111
27	3.0	5.0	.28	.00	129	13	7.5	3.3	1.8	5.7	38	79
28	3.1	4.9	.26	.00	120	35	4.6	3.1	1.8	4.9	37	61
29	3.1	4.6	.21	.00	---	70	5.9	2.8	1.6	4.5	37	53
30	3.4	5.0	.16	.00	---	29	5.9	2.9	110	4.3	37	45
31	3.7	---	.14	.00	---	18	---	2.6	---	4.2	37	---
TOTAL	90.8	129.2	35.97	3.15	1128.64	1617.4	416.8	210.9	200.7	166.0	4117.4	3631.0
MEAN	2.93	4.31	1.16	.10	40.3	52.2	13.9	6.80	6.59	5.35	133	121
MAX	7.2	5.2	4.0	.29	208	128	60	72	110	42	1970	1330
MIN	1.6	3.4	.14	.00	.00	9.4	4.6	2.7	1.6	2.1	3.8	9.0
CFSM	.03	.04	.01	.001	.41	.53	.14	.07	.07	.06	1.36	1.23
IN.	.03	.05	.01	.00	.43	.61	.18	.08	.08	.06	1.56	1.38
AC-FT	180	256	71	6.2	2240	3210	827	418	398	329	8170	7200

CAL YR 1976	TOTAL	10966.57	MEAN 30.0	MAX 895	MIN .14	CFSM .31	IN 4.16	AC-FT 21750
WTR YR 1977	TOTAL	11747.96	MEAN 32.2	MAX 1970	MIN .00	CFSM .33	IN 4.48	AC-FT 23300

IOWA RIVER BASIN

05484500 IOWA RIVER AT IOWA CITY, IA

LOCATION.--Lat 41°39'24", long 91°32'27", in SE1/4 SE1/4 sec.9, T.79 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on right bank 25 ft (8 m) downstream from Hydraulics Laboratory of University of Iowa in Iowa City, 175 ft (53 m) downstream from University Dam, 0.8 mi (1.3 km) upstream from Ralston Creek, 3.6 mi (5.8 km) downstream from Clear Creek, and at mile 74.2 (119.4 km).

DRAINAGE AREA.--3,271 mi² (8,472 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1903 to current year. Monthly discharge only for some periods, published in VSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 29.00 ft (8.839 m) above Iowa City datum, and 617.27 ft (188.144 m) above mean sea level. Oct. 1, 1934, to Sept. 30, 1972, at datum 10.00 ft (3.05 m) higher. See VSP 1708 for history of changes prior to Oct. 1, 1934.

REMARKS.--Records excellent. Slight fluctuation at low stages caused by power plant above station. Flow regulated by Coralville Lake (station 05483510) 9.1 mi (14.6 km) upstream, since Sept. 17, 1958. Corps of Engineers gage height telemeter at station.

AVERAGE DISCHARGE.--74 years, 1,628 ft³/s (46.10 m³/s), 6.76 in/yr (172 mm/yr), 1,179,000 acre-ft/yr (1,454 hm³/yr); median of yearly mean discharges, 1,420 ft³/s (40.2 m³/s), 5.9 in/yr (150 mm/yr), 1,029,000 acre-ft/yr (1,270 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,500 ft³/s (1,204 m³/s) June 8, 1918, gage height, 19.6 ft (5.974 m) from graph based on gage readings, site and datum then in use; minimum daily, 29 ft³/s (0.82 m³/s) Oct. 21, 22, 1916, regulated.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 17, 1881, reached a stage of 21.1 ft (6.43 m), from floodmarks at site and datum in use 1913-21, from information by local resident, discharge, 51,000 ft³/s (1,440 m³/s). Maximum stage known since at least 1850, about 3 ft (1 m) higher than that of July 17, 1881, occurred in June 1851, discharge 70,000 ft³/s (1,980 m³/s), estimated.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,240 ft³/s (148 m³/s) Sept. 18, gage height, 16.38 ft (4.993 m); minimum daily, 49 ft³/s (1.39 m³/s) Aug. 1, 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	152	157	165	148	146	99	958	273	103	187	49	3650
2	152	140	165	148	146	101	928	252	107	88	49	3630
3	158	160	163	146	144	112	888	246	109	78	50	2780
4	155	155	160	142	142	110	922	255	118	70	50	2210
5	155	155	160	142	138	107	898	267	116	63	50	1860
6	168	157	152	142	134	107	862	255	107	77	50	1570
7	168	123	158	140	132	107	838	246	107	60	50	1410
8	157	115	155	140	130	112	766	246	114	60	87	1220
9	157	117	155	140	132	120	710	240	109	59	98	1120
10	155	130	155	138	132	122	700	237	116	59	103	1010
11	157	130	158	136	148	167	685	237	148	59	103	898
12	157	130	160	140	186	284	650	234	126	57	93	991
13	155	128	155	138	156	146	646	231	109	63	87	1200
14	157	126	155	136	134	122	620	237	109	55	87	1060
15	155	123	158	136	99	118	614	228	105	54	65	832
16	155	140	155	138	99	112	454	207	103	88	3020	720
17	152	185	158	144	99	114	301	168	109	92	838	760
18	155	182	162	152	99	144	298	150	109	77	2120	3930
19	160	178	162	156	99	347	312	150	99	76	3400	3400
20	155	175	160	154	99	406	354	150	85	60	3920	3740
21	155	175	162	152	99	418	478	171	71	60	3930	4170
22	152	172	158	152	99	418	371	122	59	55	3930	4160
23	155	175	162	154	152	470	333	112	87	55	3900	4130
24	157	175	162	150	148	454	350	103	54	160	3680	4710
25	157	175	148	148	110	575	375	101	53	140	3180	3380
26	157	178	150	152	103	856	368	101	53	71	2810	3290
27	155	172	150	148	99	892	358	99	51	59	2730	4050
28	155	170	148	150	99	970	325	99	53	55	2620	3620
29	157	165	152	148	---	1080	294	99	53	54	2630	3150
30	165	165	150	148	---	1150	294	98	264	51	3320	3180
31	162	---	150	148	---	1030	---	98	---	50	3650	---
TOTAL	4891	4648	4844	4505	3503	11350	17148	5709	2972	2256	50759	75731
MEAN	158	155	156	145	125	366	572	184	99.1	72.8	1627	2524
MAX	195	185	165	186	186	1150	958	273	264	167	3930	4710
MIN	150	115	148	136	99	99	294	98	51	50	49	720
AC-FT	9700	9220	9610	8940	6950	22510	34010	11320	5890	4470	100700	150200

CAL YR 1976 TOTAL 449672 MEAN 1229 MAX 6110 MIN 115 AC-FT 891900
WTR YR 1977 TOTAL 180317 MEAN 516 MAX 4710 MIN 49 AC-FT 373500

IOWA RIVER BASIN

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05454500 IOWA RIVER AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples collected at Benton Street bridge at Iowa City, 0.5 mi (0.8 km) downstream from gaging station.

PERIOD OF RECORD.--September 1906 to September 1907, water years 1944 to current year.

PERIOD OF DAILY RECORD.--

CHEMICAL ANALYSIS: September 1906 to September 1907, October 1943 to September 1954.

SPECIFIC CONDUCTANCE: October 1968 to current year.

WATER TEMPERATURES: January 1944 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1943 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at times of analysis. During periods of ice affect sediment samples are collected in open water channel.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 750 micromhos Feb. 25, 1972, Mar. 2, 7, 1977; minimum daily, 150 micromhos May 17, 1974.

WATER TEMPERATURES: Maximum daily, 32.0°C July 19, 1957, Aug. 24, 25, 1959, June 27, 1971; minimum daily, 0.0°C on many days during winter periods each year.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 7,800 mg/L June 13, 1953; minimum daily mean, 2 mg/L Dec. 16, 18, 20, 21, 27, 1963, Jan. 19, 20, 21, 22, 1977.

SEDIMENT LOADS: Maximum daily, 177,000 tons (161,000 tonnes) May 23, 1944; minimum daily, 0.82 ton (0.74 tonne) Jan. 21, 22, 1977.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 30.5°C July 19; minimum, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,560 mg/L Aug. 16; minimum daily mean, 2.0 mg/L Jan. 19, 20, 21.

22. SEDIMENT LOADS: Maximum daily, 19,200 tons (17,400 tonnes) Aug. 16; minimum daily, 0.82 tons (0.74 tonnes) Jan. 21, 22.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	480	500	540	---	600	690	420	---	510	380	450	340
2	---	---	540	---	650	750	---	530	520	---	430	370
3	---	400	420	---	650	650	---	560	530	---	410	---
4	---	---	---	520	680	---	360	560	---	---	400	---
5	---	400	---	---	---	---	430	550	---	380	400	---
6	450	---	---	---	---	---	400	560	500	390	---	300
7	480	---	---	575	680	750	460	---	500	390	---	290
8	---	---	470	---	620	700	460	---	500	440	370	345
9	---	490	520	---	700	740	---	520	480	---	270	240
10	---	520	---	---	700	720	---	520	480	---	240	---
11	---	470	---	---	---	700	500	540	---	480	240	---
12	500	---	---	560	630	---	500	520	---	460	330	320
13	500	---	550	---	---	---	510	540	500	460	---	---
14	---	---	490	---	660	610	480	---	500	500	---	370
15	---	---	455	---	690	610	530	---	480	510	350	400
16	---	500	370	---	730	610	---	560	460	---	160	420
17	---	---	---	---	700	625	---	550	460	---	310	---
18	380	---	---	540	650	650	550	550	---	480	460	---
19	480	410	---	---	---	---	520	540	---	470	450	350
20	---	---	---	---	---	---	520	530	500	470	---	450
21	---	---	---	630	---	---	480	---	530	500	---	480
22	---	430	560	---	650	610	500	---	500	500	330	435
23	---	450	560	---	---	600	---	460	540	---	280	490
24	---	380	---	630	725	---	---	500	430	---	180	---
25	---	---	---	520	750	---	500	520	---	470	220	---
26	---	---	---	---	---	---	530	490	---	440	230	340
27	380	---	380	---	---	---	520	470	490	410	---	340
28	---	---	---	---	670	---	520	---	470	410	---	290
29	500	530	---	---	---	480	530	---	510	460	240	310
30	---	380	440	---	---	440	---	---	460	450	270	310
31	---	---	---	540	---	440	---	510	---	---	240	---

IOWA RIVER BASIN

09484500 IOWA RIVER AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.0	11.0	0.0	---	1.5	6.0	7.5	---	23.0	22.0	25.0	23.0
2	---	---	0.0	---	1.5	6.5	---	17.0	21.5	---	25.5	22.5
3	---	9.0	0.0	---	2.0	6.5	---	16.5	21.0	---	25.0	---
4	21.5	---	---	2.0	3.0	---	8.5	16.5	---	---	26.0	---
5	---	7.5	---	---	---	---	7.0	17.5	---	28.0	26.0	---
6	15.0	---	---	---	---	---	8.5	18.0	25.0	28.0	---	22.5
7	13.0	---	---	2.0	3.0	9.0	8.0	---	23.0	28.5	---	22.0
8	---	---	0.0	---	3.0	8.0	8.0	---	22.0	30.0	23.5	22.5
9	---	7.5	2.0	---	4.0	8.0	---	16.5	21.5	---	22.0	22.5
10	---	5.5	---	---	5.0	7.5	---	16.5	21.0	---	25.5	---
11	---	5.0	---	---	3.0	9.5	12.0	17.0	---	27.0	22.0	---
12	15.5	---	---	2.0	---	---	13.5	18.0	---	27.5	21.5	21.0
13	15.0	---	1.0	4.0	---	---	14.0	19.0	22.5	29.0	---	---
14	17.0	---	3.5	---	4.0	6.0	14.0	---	22.0	29.0	---	19.5
15	---	---	3.5	---	5.5	8.5	15.5	---	23.0	28.5	22.0	19.5
16	---	6.0	2.5	---	5.0	9.5	---	23.0	24.5	---	21.5	20.5
17	---	---	---	---	6.0	8.5	---	22.5	25.0	---	22.0	---
18	11.5	---	---	2.0	6.5	7.0	14.5	23.0	---	27.5	21.5	---
19	10.0	4.5	---	---	---	---	18.5	24.0	---	30.5	22.0	19.0
20	9.0	---	---	---	---	---	18.0	25.5	25.0	28.5	---	18.5
21	---	---	---	3.0	---	---	18.5	---	24.0	29.0	---	18.0
22	---	2.5	2.0	---	6.5	6.5	17.5	---	23.0	27.0	21.0	19.0
23	---	2.5	1.0	---	---	5.0	---	21.0	23.5	---	21.0	18.0
24	---	4.0	---	3.0	6.0	8.0	---	23.0	25.0	---	20.0	---
25	---	---	---	2.0	6.0	6.0	15.5	23.5	---	27.0	20.0	---
26	---	---	---	---	---	---	15.5	25.0	---	25.0	21.0	21.0
27	8.5	---	4.0	---	---	---	16.5	24.5	26.5	25.0	---	17.5
28	7.0	---	---	---	6.0	---	16.5	---	27.0	24.0	---	19.5
29	6.0	0.0	0.0	---	---	8.5	15.0	---	25.0	26.0	21.0	20.0
30	---	0.0	0.0	---	---	9.0	---	---	25.0	---	22.0	19.0
31	---	---	---	1.0	---	7.5	---	24.5	---	---	23.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH			
1	39	16	22	9.3	8	3.5	11	4.4	5	2.0	13	3.5		
2	39	16	25	11	9	4.0	12	4.8	6	2.4	18	4.9		
3	37	15	22	9.6	12	5.3	11	4.3	4	1.6	43	13		
4	39	16	18	7.5	11	4.8	11	4.2	4	1.5	36	11		
5	111	58	14	5.9	10	4.3	10	3.8	6	2.2	30	8.7		
6	49	22	18	7.5	8	3.3	10	3.8	7	2.5	25	7.2		
7	24	11	17	5.6	7	3.0	6	2.3	7	2.5	19	5.5		
8	23	9.7	12	3.7	6	2.5	7	2.6	10	3.5	26	7.9		
9	23	9.7	7	2.2	12	5.0	11	4.2	11	3.9	37	12		
10	22	9.2	11	3.9	13	5.4	12	4.5	13	4.8	31	10		
11	21	8.9	20	7.0	11	4.7	10	3.7	14	5.6	64	29		
12	26	11	18	6.3	10	4.3	9	3.4	24	12	119	85		
13	129	64	15	5.2	7	2.9	7	2.6	17	7.2	83	33		
14	105	45	13	4.4	8	3.3	9	3.3	7	2.5	56	18		
15	103	43	12	4.0	22	9.4	11	4.0	6	1.6	42	13		
16	76	32	11	4.2	13	5.5	9	3.4	10	2.7	38	11		
17	48	20	17	6.6	10	4.3	6	2.3	7	1.9	32	9.8		
18	24	10	14	6.9	12	5.2	3	1.2	8	2.1	34	13		
19	22	9.5	9	4.3	14	6.1	2	0.84	7	1.9	44	41		
20	29	12	8	3.8	13	5.6	2	0.83	6	1.5	43	47		
21	28	12	9	4.3	11	4.8	2	0.82	5	1.3	28	32		
22	27	11	9	4.2	9	3.8	2	0.82	6	1.6	13	15		
23	26	11	8	3.8	6	2.5	3	1.2	38	16	20	25		
24	26	11	11	5.2	6	2.5	3	1.2	39	16	26	32		
25	23	9.7	11	5.2	8	3.2	5	2.0	29	8.6	20	47		
26	20	8.5	10	4.8	10	4.1	7	2.9	24	6.7	35	81		
27	15	6.3	10	4.6	11	4.5	8	3.2	23	6.1	41	98		
28	16	6.7	9	4.1	13	5.2	7	2.8	19	5.1	86	225		
29	25	11	8	3.6	14	5.7	6	2.4	---	---	83	247		
30	35	16	8	3.6	12	4.9	5	2.0	---	---	53	165		
31	31	14	---	---	11	4.5	3	1.2	---	---	46	120		
TOTAL	---	545.2	---	164.2	---	138.2	---	85.01	---	127.2	---	1474.5		

IOWA RIVER BASIN

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05454500 IOWA RIVER AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER			
1	45	116	71	52	65	18	114	51	48	5.4	67	680		
2	43	108	66	45	65	18	102	24	44	5.9	66	629		
3	42	100	61	41	62	18	95	20	38	5.1	62	468		
4	63	157	68	47	63	20	94	18	38	5.1	55	328		
5	54	131	63	45	62	19	93	16	39	5.3	49	246		
6	53	123	56	39	58	17	101	21	39	5.3	44	187		
7	50	113	56	37	67	19	74	12	38	5.1	44	168		
8	42	87	66	44	69	21	27	4.4	272	920	47	195		
9	48	92	74	48	62	18	24	3.8	392	104	54	163		
10	49	93	76	49	67	21	26	4.1	310	86	58	158		
11	63	117	79	61	70	28	30	4.8	197	55	62	150		
12	64	112	71	45	68	23	30	4.6	87	22	62	166		
13	61	106	70	44	61	18	28	4.3	72	17	57	185		
14	58	97	70	45	63	19	26	3.9	94	22	48	137		
15	58	127	67	41	60	17	31	4.5	86	15	46	108		
16	58	71	67	37	45	13	37	8.8	1560	19200	51	99		
17	58	47	77	34	37	11	36	8.0	370	837	57	117		
18	61	49	69	28	48	14	33	6.9	157	899	512	5430		
19	68	57	66	27	50	13	32	6.0	147	1350	280	2570		
20	61	58	61	33	44	10	28	4.1	153	1620	120	1210		
21	86	111	239	110	29	5.6	25	4.1	143	1520	112	1260		
22	75	75	245	81	49	7.8	25	3.9	120	1270	87	977		
23	63	57	165	50	43	6.6	27	4.0	105	1110	50	558		
24	69	65	82	23	54	7.9	62	27	109	1080	182	2310		
25	76	77	55	15	59	8.4	38	14	136	1170	117	1070		
26	73	73	37	10	49	7.8	32	6.1	68	501	89	791		
27	72	70	44	12	28	3.9	35	5.6	51	376	74	509		
28	72	63	45	12	32	4.6	48	6.7	58	410	79	772		
29	73	98	60	13	40	5.7	50	7.3	70	497	78	663		
30	73	59	55	15	88	61	52	7.2	70	627	72	618		
31	---	---	63	17	---	---	50	6.8	68	672	---	---		
TOTAL	---	2668	---	1190	---	474.5	---	322.9	---	34418.1	---	23159		

TOTAL LOAD FOR YEAR: 64766.81 TONS.

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	NUMBER OF SAM- PLING POINTS (00063)	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SUS- PENDE SEDIM- ENT CHARGE (MG/L) (00154)	SUS- PENDE SEDIM- ENT CHARGE (T/DAY) (00155)	SUS- SED. FALL DIAM. X FINER THAN .002 MM (70337)	SUS- SED. FALL DIAM. X FINER THAN .004 MM (70338)	SUS- SED. FALL DIAM. X FINER THAN .008 MM (70339)	SUS- SED. FALL DIAM. X FINER THAN .016 MM (70340)
APR 21...	1030	18.5	--	518	97	136	78	81	87	94
SEP 22...	1130	19.0	4	4160	--	--	--	--	--	--
		SUS. SED. SIEVE DIAM. X FINER THAN (70331)		BED MAT. SIEVE DIAM. X FINER THAN (80164)		BED MAT. SIEVE DIAM. X FINER THAN (80165)		BED MAT. SIEVE DIAM. X FINER THAN (80166)		BED MAT. SIEVE DIAM. X FINER THAN (80167)
DATE		.082 MM (70331)		.082 MM (80164)		.125 MM (80165)		.125 MM (80166)		.250 MM (80167)
APR 21...	98	--	--	--	--	--	--	--	--	--
SEP 22...	--	1	1	5	47	84	95	97	98	100

IOWA RIVER BASIN

08455000 RALSTON CREEK AT IOWA CITY, IA

LOCATION.--Lat 41°39'56", long 91°30'48", in SE1/4 NW1/4 sec.11, T.79 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on left bank 10 ft (3 m) upstream from bridge on Rochester Avenue, 1.0 mi (1.6 km) northeast of post office in Iowa City and 2.2 mi (3.5 km) upstream from mouth.

DRAINAGE AREA.--3.01 mi² (7.80 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1924 to current year.

REVISED RECORDS.--WSP 1508: 1933, 1935-37, 1940-41 (M); 1942, 1943 (M), 1948-51, 1952 (P), 1953, 1954 (M), 1955, WRD Iowa, 1957: 1955-56.

GAGE.--Water stage recorder and V-notch sharp-crested weir. Datum of gage is 563.27 ft, (202.155 m) above mean sea level (University of Iowa bench mark).

REMARKS.--Records good except those for winter period, which are poor.

AVERAGE DISCHARGE.--53 years, 1.57 ft³/s (0.047 m³/s), 7.53 in/yr (191 mm/yr), 1,210 acre-ft/yr (1.49 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,940 ft³/s (54.9 m³/s) Sept. 21, 1955, gage height, 5.93 ft (2.103 m); maximum gage height, 9.08 ft (2.761 m) July 18, 1956; no flow at times during most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 522 ft³/s (14.78 m³/s) Aug. 16, gage height, 5.13 ft (1.558 m) at 0230 hours, no other peak above base of 200 ft³/s (5.66 m³/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.03	.00	.00	.00	.16	1.1	.31	.00	.09	.00	.26
2	.00	.02	.00	.00	.00	.17	1.2	.26	.00	.01	.00	.24
3	.00	.03	.00	.00	.00	.45	.65	.25	.00	.00	.00	.18
4	.00	.02	.00	.00	.00	.29	3.4	.85	.02	.00	.00	.16
5	.55	.03	.00	.00	.00	.22	2.3	1.2	.00	.00	.00	.12
6	.11	.03	.00	.00	.00	.25	1.5	.44	.00	.00	.01	.11
7	.02	.04	.00	.00	.00	.27	.83	.34	.00	.00	.04	.09
8	.00	.03	.00	.00	.00	.49	.56	.26	.00	.00	.13	.07
9	.00	.04	.00	.00	.00	.33	.47	.20	.00	.00	.44	.07
10	.00	.06	.00	.00	.27	.26	.49	.17	.00	.00	.12	.04
11	.00	.03	.00	.00	3.9	6.9	.32	.15	.59	.00	.42	.03
12	.00	.00	.00	.00	.59	10	.25	.14	.20	.00	.07	.06
13	.00	.00	.00	.00	.26	1.0	.27	.12	.04	.00	.47	.11
14	.00	.00	.00	.00	.11	.50	.27	.05	.00	.00	.32	.05
15	.00	.01	.00	.00	.04	.47	.25	.05	.00	.00	.09	.05
16	.00	.05	.00	.00	.02	.59	.23	.05	.00	.00	.56	.07
17	.00	.05	.00	.00	.00	.30	.24	.08	.02	.00	.87	2.0
18	.00	.07	.00	.00	.00	.39	.20	.07	.00	.00	.47	27
19	.00	.07	.01	.00	.00	.25	.21	.04	.00	.00	.32	1.9
20	.03	.06	.10	.00	.00	.38	8.1	.25	.00	.00	.23	1.0
21	.02	.06	.04	.00	.01	.83	10	.15	.00	.00	.23	.68
22	.02	.05	.01	.00	.40	1.2	3.2	.07	.00	.00	.16	.55
23	.01	.02	.00	.00	3.5	.87	1.8	.05	.00	.00	.12	.53
24	.00	.02	.00	.00	.87	.75	1.3	.04	.00	.12	.08	2.1
25	.01	.07	.00	.00	.16	.59	.82	.03	.00	.00	.06	.58
26	.01	.05	.00	.00	.14	.53	.62	.05	.00	.00	.75	.44
27	.01	.02	.00	.00	.16	1.7	.45	.03	.00	.00	.18	.36
28	.01	.00	.00	.00	.19	9.6	.38	.01	.00	.00	4.8	.30
29	.02	.00	.00	.00	---	8.1	.30	.00	.00	.00	.65	.26
30	.04	.00	.00	.00	---	2.7	.31	.02	.00	.00	.40	9.8
31	.08	---	.00	.00	---	1.3	---	.03	---	.00	.34	---
TOTAL	.91	.96	.16	.00	10.62	51.94	41.92	5.78	4.17	.22	78.64	49.20
MEAN	.029	.032	.005	.000	.38	1.69	1.40	.19	.14	.007	2.54	1.64
MAX	.55	.07	.10	.00	3.9	10	10	1.2	3.3	.12	54	27
MIN	.00	.00	.00	.00	.00	.16	.20	.00	.00	.00	.00	.03
CFSM	.01	.01	.002	.000	.13	.56	.47	.05	.05	.002	.84	.55
IN	.01	.01	.00	.00	.13	.64	.52	.07	.05	.00	.97	.61
AC-FT	1.8	1.9	.3	.00	21	103	83	11	8.3	.4	155	98

CAL YR 1976 TOTAL 294.78 MEAN .81 MAX 34 MIN .00 CFSM .27 IN 3.64 AC-FT 585
WTR YR 1977 TOTAL 244.52 MEAN .67 MAX 54 MIN .00 CFSM .22 IN 3.02 AC-FT 485

05455000 RALSTON CREEK AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 1952 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1958 to current year.

WATER TEMPERATURES: October 1960 to current year.

SUSPENDED-SEDIMENT DISCHARGE: April 1952 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis. No flow Oct. 1-4, 9-19, 24, Nov. 12-14, 29, 30, Dec. 1-18, Dec. 23 to Feb. 9, Feb. 17-20, June 1-3, 8-10, 14-16, 18-29, July 3-23, July 25 to Aug. 5.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 8,000 micromhos Dec. 24, 1973; minimum daily, 120 micromhos May 19, 20, 1977.

WATER TEMPERATURES: Maximum daily, 31.0°C July 21, 1968; minimum daily, 0.0°C on many days during winter periods each year.

SEDIMENT CONCENTRATION: Maximum daily mean, 9,300 mg/L Aug. 25, 1975; minimum daily mean, 0 mg/L on many days in 1953-59, 1963-68, 1971, 1975, 1976, 1977.

SEDIMENT LOADS: Maximum daily, 4,300 tons (3,900 tonnes) May 23, 1966; minimum daily, 0 ton (0 tonnes) on many days in 1953-59, 1963-68, 1971, 1972, 1975, 1976, 1977.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 900 micromhos Mar. 23; minimum daily, 120 micromhos May 19, 20.

WATER TEMPERATURES: Maximum daily, 28.0°C May 26; minimum daily, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,420 mg/L Aug. 8; minimum daily mean, 0 mg/L on many days.

SEDIMENT LOADS: Maximum daily, 743 tons (674 tonnes) Aug. 16; minimum daily, 0 ton (0 tonnes) on many days.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	460	---	---	---	---	480	420	---	300	---	---
2	---	375	---	---	---	620	500	420	---	310	---	---
3	---	380	---	---	---	620	460	370	---	---	---	---
4	---	410	---	---	---	500	540	370	---	---	---	---
5	660	410	---	---	---	560	520	460	---	---	---	---
6	---	360	---	---	---	610	560	420	---	---	180	---
7	670	390	---	---	---	610	490	460	---	---	---	---
8	680	400	---	---	---	480	460	420	---	---	180	---
9	---	---	---	---	---	480	460	420	---	---	---	---
10	---	420	---	---	---	430	470	380	---	---	---	440
11	---	470	---	---	565	520	480	390	150	---	---	520
12	---	470	---	---	450	610	530	420	500	---	---	470
13	---	---	---	---	480	640	450	430	490	---	---	510
14	---	---	---	---	450	710	450	420	---	---	---	510
15	---	---	---	---	630	700	400	420	---	---	---	550
16	---	600	---	---	630	680	440	440	---	---	---	510
17	---	340	---	---	---	570	420	460	---	---	---	580
18	---	390	---	---	---	700	440	360	---	---	---	450
19	---	370	---	---	---	660	410	120	---	---	500	520
20	---	370	---	---	---	650	460	120	---	---	510	500
21	680	330	---	---	630	230	420	460	---	---	520	430
22	720	380	---	---	560	600	420	460	---	---	510	480
23	700	375	---	---	400	800	520	440	---	---	530	470
24	---	370	---	---	630	620	480	380	---	150	---	490
25	710	360	---	---	690	500	480	440	---	---	480	540
26	---	---	---	---	---	510	460	440	---	---	---	500
27	720	---	---	---	640	540	430	490	---	---	---	470
28	720	---	---	---	630	505	440	410	---	---	420	490
29	680	---	---	---	---	600	400	240	---	---	---	450
30	---	---	---	---	---	480	420	220	215	---	510	---
31	340	---	---	---	---	480	---	240	---	---	---	---

IOWA RIVER BASIN

08485900 RALSTON CREEK AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	2.0	---	---	---	---	5.0	17.0	---	22.0	---	20.0
2	---	8.0	---	---	---	0.0	9.0	12.0	---	22.0	---	22.0
3	---	4.0	---	---	---	0.0	4.0	11.0	---	---	---	20.0
4	---	3.0	---	---	---	0.0	5.0	12.0	24.0	---	---	19.0
5	9.0	0.0	---	---	---	0.0	6.0	18.0	---	---	---	19.0
6	6.0	2.0	---	---	---	0.0	6.0	15.0	---	---	22.0	18.0
7	7.0	1.0	---	---	---	0.0	15.0	11.0	---	---	24.0	18.0
8	4.0	0.0	---	---	---	0.0	13.0	13.0	---	---	21.0	21.0
9	---	2.0	---	---	---	0.0	8.0	9.0	---	---	22.0	19.0
10	---	1.0	---	---	2.0	4.0	12.0	14.0	---	---	24.0	19.0
11	---	0.0	---	---	0.0	4.0	15.0	15.0	20.0	---	21.0	19.0
12	---	1.0	---	---	0.0	5.0	17.0	12.0	20.0	---	22.0	16.0
13	---	---	---	---	1.0	4.0	13.0	12.0	19.0	---	21.0	15.0
14	---	---	---	---	0.0	12.0	12.0	18.0	---	---	18.0	17.0
15	---	---	---	---	0.0	11.0	13.0	17.0	---	---	23.0	15.0
16	---	0.0	---	---	0.0	4.0	20.0	19.0	---	---	20.5	16.0
17	---	2.0	---	---	---	3.0	21.0	26.0	---	---	20.0	17.0
18	---	4.0	---	---	---	4.0	22.0	23.0	---	---	19.0	16.0
19	---	2.0	---	---	---	1.0	18.0	23.0	---	---	12.0	15.0
20	---	2.0	---	---	---	7.0	16.0	22.0	---	---	19.0	17.0
21	5.0	0.0	---	---	0.0	0.0	14.0	23.0	---	---	22.0	19.0
22	6.0	1.0	---	---	1.0	6.0	12.0	19.0	---	---	19.0	16.0
23	5.0	0.0	---	---	2.0	9.0	12.0	16.0	---	---	20.0	17.0
24	---	1.0	---	---	0.0	7.0	14.0	25.0	20.0	---	19.0	16.0
25	5.0	2.0	---	---	0.0	7.0	15.0	18.0	---	---	19.0	18.0
26	5.0	---	---	---	0.0	7.0	15.0	26.0	---	---	22.0	16.0
27	4.0	---	---	---	0.0	9.0	20.0	24.0	---	---	22.0	16.0
28	3.0	---	---	---	0.0	9.5	16.0	20.0	---	---	21.0	16.0
29	5.0	---	---	---	---	13.0	6.0	22.0	---	---	18.0	21.0
30	6.0	---	---	---	---	7.0	8.0	21.0	20.0	---	17.0	14.0
31	6.0	---	---	---	---	7.0	---	20.0	---	---	22.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
1	0	.00	136	0.01	0	.00	0	.00	0	.00	10	.00
2	0	.00	110	0.01	0	.00	0	.00	0	.00	8	.00
3	0	.00	131	0.01	0	.00	0	.00	0	.00	14	0.02
4	0	.00	144	0.01	0	.00	0	.00	0	.00	27	0.03
5	173	0.26	183	0.01	0	.00	0	.00	0	.00	7	.00
6	18	0.01	146	0.01	0	.00	0	.00	0	.00	30	0.02
7	12	.00	144	0.02	0	.00	0	.00	0	.00	17	0.01
8	9	.00	135	0.01	0	.00	0	.00	0	.00	7	0.01
9	0	.00	122	0.01	0	.00	0	.00	0	.00	8	.00
10	0	.00	167	0.03	0	.00	0	.00	25	0.02	6	.00
11	0	.00	188	0.01	0	.00	0	.00	50	0.53	220	4.1
12	0	.00	0	.00	0	.00	0	.00	54	0.09	300	8.1
13	0	.00	0	.00	0	.00	0	.00	50	0.04	13	0.04
14	0	.00	0	.00	0	.00	0	.00	35	0.01	18	0.02
15	0	.00	50	.00	0	.00	0	.00	15	.00	66	0.08
16	0	.00	165	0.02	0	.00	0	.00	5	.00	32	0.05
17	0	.00	108	0.01	0	.00	0	.00	0	.00	26	0.02
18	0	.00	82	0.02	0	.00	0	.00	0	.00	18	0.02
19	0	.00	60	0.01	45	.00	0	.00	0	.00	22	0.01
20	50	.00	92	0.01	207	0.06	0	.00	0	.00	27	0.03
21	17	.00	178	0.03	185	0.02	0	.00	10	.00	147	0.33
22	13	.00	223	0.03	45	.00	0	.00	14	0.02	68	0.22
23	10	.00	232	0.01	0	.00	0	.00	87	0.82	25	0.06
24	0	.00	239	0.01	0	.00	0	.00	24	0.06	12	0.02
25	16	.00	243	0.08	0	.00	0	.00	23	0.01	32	0.05
26	15	.00	212	0.03	0	.00	0	.00	20	0.01	58	0.08
27	8	.00	119	0.01	0	.00	0	.00	18	0.01	127	0.58
28	6	.00	37	.00	0	.00	0	.00	13	0.01	210	9.6
29	85	.00	0	.00	0	.00	0	.00	---	---	117	4.7
30	193	0.02	0	.00	0	.00	0	.00	---	---	47	0.34
31	153	0.02	---	---	0	.00	0	.00	---	---	45	0.16
TOTAL	---	0.31	---	0.38	---	0.08	---	.00	---	1.63	---	28.70

IOWA RIVER BASIN

75

05455000 RALSTON CREEK AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)			
APRIL			MAY			JUNE			JULY			AUGUST		SEPTEMBER	
1	42	0.12	39	0.03	0	.00	230	0.06	0	.00	30	0.02			
2	135	0.44	90	0.06	0	.00	86	.00	0	.00	17	0.01			
3	37	0.06	72	0.05	0	.00	0	.00	0	.00	23	0.01			
4	69	0.63	121	0.28	56	.00	0	.00	0	.00	43	0.02			
5	63	0.39	58	0.19	0	.00	0	.00	0	.00	22	0.01			
6	74	0.30	85	0.10	0	.00	0	.00	55	.00	12	.00			
7	23	0.05	87	0.08	0	.00	0	.00	37	.00	22	0.01			
8	11	0.02	92	0.06	0	.00	0	.00	1420	180	13	.00			
9	39	0.05	73	0.04	0	.00	0	.00	213	0.25	26	.00			
10	76	0.08	83	0.04	0	.00	0	.00	54	0.02	78	0.01			
11	73	0.05	82	0.03	200	0.32	0	.00	71	0.08	99	0.01			
12	106	0.07	63	0.02	40	0.02	0	.00	40	0.01	91	0.01			
13	103	0.08	144	0.05	43	.00	0	.00	500	0.63	60	0.02			
14	71	0.05	108	0.01	0	.00	0	.00	550	0.48	45	0.01			
15	54	0.04	87	0.01	0	.00	0	.00	120	0.03	37	.00			
16	65	0.04	91	0.01	0	.00	0	.00	1320	743	28	0.01			
17	77	0.05	101	0.02	26	.00	0	.00	50	0.12	460	2.5			
18	114	0.06	95	0.02	0	.00	0	.00	46	0.06	674	3.1			
19	137	0.08	45	.00	0	.00	0	.00	48	0.04	209	1.1			
20	210	8.9	25	0.02	0	.00	0	.00	44	0.03	64	0.17			
21	262	7.1	37	0.02	0	.00	0	.00	36	0.02	56	0.10			
22	113	0.90	97	0.02	0	.00	0	.00	25	0.01	76	0.11			
23	126	0.61	46	0.01	0	.00	0	.00	47	0.02	54	0.08			
24	106	0.37	82	0.01	0	.00	63	0.02	48	0.01	710	4.0			
25	105	0.24	67	0.01	0	.00	0	.00	22	.00	29	0.05			
26	117	0.20	68	0.01	0	.00	0	.00	92	0.19	28	0.03			
27	90	0.11	40	.00	0	.00	0	.00	27	0.01	32	0.03			
28	72	0.07	73	.00	0	.00	0	.00	179	2.3	46	0.04			
29	103	0.08	118	.00	0	.00	0	.00	20	0.04	42	0.03			
30	65	0.05	149	0.01	1180	10	0	.00	59	0.06	319	43			
31	---	---	142	0.01	---	---	0	.00	45	0.04	---	---			
TOTAL	---	21.38	---	1.22	---	10.34	---	0.08	---	847.45	---	134.39			

TOTAL LOAD FOR YEAR: 1045.96 TONS.

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SUS- PENDED SEDI- MENT CHARGE (MG/L) (00154)	SUS- PENDED SEDI- MENT DIS- CHARGE (T/DAY) (00155)	SUS. SED. FALL DIAM. X FINER THAN (70337)	SUS. SED. FALL DIAM. X FINER THAN (70338)	SUS. SED. FALL DIAM. X FINER THAN (70339)	SUS. SED. FALL DIAM. X FINER THAN (70340)	SUS. SED. FALL DIAM. X FINER THAN (70342)	SUS. SED. FALL DIAM. X FINER THAN (70331)
AUG...	0820	20.0	55	5230	777	50	50	64	75	100	--
08...	0840	20.0	71	4590	899	49	55	63	81	--	99

IOWA RIVER BASIN

05455010 SOUTH BRANCH RALSTON CREEK AT IOWA CITY, IA

LOCATION.--Lat 41°39'05", long 91°30'27", in SW1/4 NE1/4 sec.14, T.79 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on right bank 60 ft (18 m) downstream from bridge on Muscatine Avenue in Iowa City, and 1.2 mi (1.9 km) upstream from mouth.

DRAINAGE AREA.--2.94 mi² (7.61 km²).

PERIOD OF RECORD.--October 1963 to current year.

REVISED RECORDS.--WRD Iowa 1968: Drainage area.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 678.03 ft (206.664 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--14 years, 2.47 ft³/s (0.070 m³/s), 11.41 in/yr (290 mm/yr), 1.790 acre-ft/yr (2.21 km³/yr); median of yearly mean discharges, 2.1 ft³/s (0.06 m³/s), 9.7 in/yr (246 mm/yr), 1.620 acre-ft/yr (1.88 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1.070 ft³/s (30.3 m³/s) July 17, 1972, gage height, 9.47 ft (2.886 m); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 14, 1962, reached a stage of 10.5 ft (3.20 m), from flood profile, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft³/s (5.66 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Apr. 20	1645	316 8.95	6.07 1.850	Aug. 15	2355	*834 15.1	*7.51 2.289

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.01	.00	.00	.00	.15	.90	.50	.04	.40	.00	1.3
2	.00	.01	.00	.00	.00	.16	.68	.47	.03	.21	.00	2.3
3	.00	.01	.00	.00	.00	.45	.53	.53	.03	.16	.00	1.3
4	.00	.00	.00	.00	.00	.35	5.7	2.4	1.0	.09	.00	.96
5	2.8	.00	.00	.00	.00	.20	1.5	1.7	.07	.02	.56	.81
6	.18	.11	.00	.00	.00	.23	1.2	1.5	.00	.01	.77	.38
7	.03	.01	.00	.00	.00	.25	.80	.49	.06	.01	2.7	.37
8	.00	.02	.00	.00	.00	.45	.62	.44	.24	.00	10	.31
9	.00	.01	.00	.00	.00	.25	.66	.39	.03	.00	2.3	.36
10	.00	.01	.00	.00	.10	.38	.62	.39	.52	.00	.43	.22
11	.00	.03	.00	.00	6.4	11	.53	.48	8.5	.00	3.1	.20
12	.00	.00	.00	.00	1.5	4.7	.32	.81	.20	.00	.39	.68
13	.00	.00	.00	.00	.20	.62	.63	.60	.12	.00	.64	.63
14	.00	.00	.00	.00	.10	.36	.59	.33	.08	.00	.48	.17
15	.00	.00	.00	.00	.03	.32	.53	.33	.05	.00	28	.62
16	.00	.00	.00	.00	.00	.22	.51	.48	.03	.63	48	.26
17	.00	.00	.00	.00	.00	.26	.40	.46	.95	.01	2.3	9.3
18	.00	.00	.00	.00	.00	.47	.29	.41	.10	.70	1.0	31
19	.23	.02	.00	.00	.00	.43	.38	.37	.00	.01	.80	4.2
20	.03	.01	.09	.00	.00	.67	14	2.5	.00	.01	.61	2.4
21	.00	.02	.04	.00	.05	1.7	9.4	.54	.00	.00	.92	1.8
22	.00	.01	.00	.00	.40	2.3	2.3	.41	.00	.00	.44	1.1
23	.00	.00	.00	.00	3.0	.78	1.6	.33	.48	.00	.52	1.5
24	.00	.00	.00	.00	1.0	.59	1.1	.15	.05	3.9	.62	3.4
25	.00	.06	.00	.00	.28	.66	.94	.22	.00	.06	.45	1.1
26	.00	.10	.00	.00	.16	.81	.84	.23	.00	.01	5.5	.95
27	.00	.02	.00	.00	.17	1.1	.71	.12	.00	.00	.45	.79
28	.00	.01	.00	.00	.18	13	.81	.09	.02	.01	9.3	.73
29	.00	.00	.00	.00	---	3.0	.65	.17	.00	.02	1.6	.68
30	.01	.00	.00	.00	---	1.3	.56	.19	22	.36	1.1	11
31	.07	---	.00	.00	---	.76	---	.06	---	.16	1.6	---
TOTAL	3.35	.47	.13	.00	13.57	47.92	50.60	18.09	34.60	6.78	124.65	90.67
MEAN	.11	.016	.004	.000	.48	1.55	1.69	.58	1.15	.22	4.02	2.69
MAX	2.8	.11	.09	.00	6.4	13	14	2.5	.22	3.9	.48	.31
MIN	.00	.00	.00	.00	.00	.15	.29	.06	.00	.00	.00	.17
CFSM	.04	.005	.001	.000	.16	.53	.58	.20	.39	.08	1.37	.92
IN.	.04	.01	.00	.00	.17	.61	.64	.23	.44	.09	1.58	1.02
AC-FT	6.6	.9	.3	.00	27	95	100	36	69	13	247	160

CAL YR 1976 TOTAL 304.07 MEAN .83 MAX 36 MIN .00 CFSM .28 IN 3.85 AC-FT 603
VTR YR 1977 TOTAL 380.83 MEAN 1.04 MAX 48 MIN .00 CFSM .35 IN 4.82 AC-FT 758

05455500 ENGLISH RIVER AT KALONA, IA

LOCATION.--Lat 41°27'59", long 91°42'56", in SE1/4 sec.13, T.77 N., R.8 W., Washington County, Hydrologic Unit 07080209, on right bank 30 ft (9 m) upstream from bridge on State Highway 1, 0.8 mi (1.3 km) south of Kalona, 1.1 mi (1.8 km) upstream from Camp Creek, 4.5 mi (7.2 km) downstream from Smith Creek, and 14.5 mi (23.3 km) upstream from mouth.

DRAINAGE AREA.--573 mi² (1,484 km²).

PERIOD OF RECORD.--September 1939 to current year.

REVISED RECORDS.--VSP 1438: Drainage area. WSP 1558: 1940 (M), 1941, WSP 1708: 1956, 1957 (P), 1958 (P).

GAGE.--Water-stage recorder. Datum of gage is 633.45 ft (193.076 m) above mean sea level (levels by Corps of Engineers). Prior to Dec. 27, 1939, nonrecording gage 30 ft (9 m) downstream at same datum.

REMARKS.--Records good except those for winter period and those above 300 ft³/s for period Aug. 8 to Sept. 25 which are fair. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--38 years, 361 ft³/s (10.22 m³/s), 8.56 in/yr (217 mm/yr), 261,500 acre-ft/yr (322 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft³/s (566 m³/s) Sept. 21, 1965, gage height, 21.45 ft (6.538 m); minimum daily, 0.66 ft³/s (0.019 m³/s) Feb. 5-7, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1930 reached a stage of 19.9 ft (6.07 m) from floodmark, from information by local residents, discharge, 18,500 ft³/s (524 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,520 ft³/s (99.7 m³/s) Aug. 16, gage height, 11.98 ft (3.652 m) at 1800 hours, from graph based on gage readings, no peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 0.66 ft³/s (0.019 m³/s) Feb. 5-7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	11	6.2	.90	.70	47	86	17	15	33	4.2	301
2	29	14	5.0	.90	.70	47	71	18	13	13	3.0	1160
3	28	16	4.7	.90	.70	39	66	18	11	7.5	3.5	980
4	25	15	4.7	.90	.70	42	72	21	12	8.4	1.8	576
5	21	14	4.4	.80	.66	29	10E	35	39	6.2	.80	492
6	24	13	3.8	.80	.66	28	93	42	21	6.0	3.6	323
7	28	11	4.5	.80	.66	28	78	58	13	5.0	353	229
8	29	8.8	4.7	.80	.70	35	62	177	11	4.5	1770	179
9	26	9.4	4.9	.80	.80	42	53	87	10	4.0	1440	167
10	21	9.4	4.0	.80	1.2	33	47	58	7.5	3.5	470	133
11	17	9.4	3.6	.80	1.7	84	40	44	10	4.0	200	110
12	13	8.8	3.6	.80	2.5	197	34	35	45	4.5	101	125
13	11	7.4	3.4	.80	3.5	270	30	29	25	5.0	79	139
14	9.4	6.8	3.6	.80	5.0	129	28	25	15	5.0	56	135
15	9.4	6.2	3.1	.70	7.5	81	26	22	9.2	5.0	42	129
16	8.1	5.5	3.3	.70	11	51	26	19	5.5	62	1950	123
17	6.8	6.2	3.7	.70	15	48	25	19	4.8	50	3350	135
18	5.5	6.8	3.8	.70	21	42	23	16	20	40	1750	819
19	7.4	7.4	4.0	.70	23	37	20	14	127	60	499	2720
20	7.4	8.8	3.6	.70	22	37	21	12	54	55	248	1030
21	9.4	11	3.2	.70	20	40	59	103	28	29	157	488
22	11	9.4	2.4	.70	28	43	106	51	17	27	117	345
23	11	8.8	2.7	.70	45	55	73	31	14	11	96	283
24	11	8.1	3.3	.70	62	64	56	61	115	10	83	684
25	11	8.8	3.3	.70	61	58	41	41	33	7.5	71	693
26	11	10	3.6	.70	74	46	32	45	19	6.2	1530	418
27	11	9.4	3.4	.70	64	43	27	26	17	4.8	2250	308
28	11	10	3.0	.70	55	64	23	20	11	3.6	1000	246
29	12	6.8	2.0	.70	---	264	20	17	7.6	3.5	989	211
30	11	6.2	1.5	.70	---	266	18	16	20	2.3	598	191
31	11	---	1.0	.70	---	131	---	16	---	3.5	380	---
TOTAL	474.4	283.4	112.0	23.50	528.68	2431	1461	1203	749.5	489.9	19595.80	13832
MEAN	15.3	9.45	3.61	.76	18.9	78.4	48.7	38.8	25.0	15.8	632	461
MAX	29	16	6.2	.90	74	270	106	177	127	62	3350	2720
MIN	5.5	5.5	1.0	.70	.66	28	18	12	4.8	2.3	.80	110
CFSM	.03	.02	.006	.001	.03	.14	.09	.07	.04	.03	1.10	.81
IN.	.03	.02	.01	.00	.03	.16	.09	.08	.05	.03	1.27	.90
AC-FT	941	562	222	47	1050	4820	2900	2390	1490	972	38876	27440

CAL YR 1976 TOTAL 92821.80 MEAN 254 MAX 9230 MIN 1.0 CFSM .44 IN 6.03 AC-FT 184100
WTR YR 1977 TOTAL 41184.18 MEAN 113 MAX 3350 MIN .66 CFSM .28 IN 2.87 AC-FT 81590

IOWA RIVER BASIN

05455700 IOWA RIVER NEAR LONE TREE, IA

LOCATION.--Lat. 41°28'18", long. 91°28'25", in NW1/4 NE1/4 sec.6, T.76 N., R.6 W., Louisa County, Hydrologic Unit 07080209, on left bank 10 ft (3 m) downstream from bridge on county highway W86, 5 mi (8.0 km) southwest of Lone Tree, 6.2 mi (10.0 km) downstream from English River, and at mile 47.2 (75.9 km).

DRAINAGE AREA.--4,293 mi² (11,118 km²).

PERIOD OF RECORD.--October 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 588.16 ft (179.271 m) above mean sea level. Prior to Dec. 28, 1956, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Flow regulated by Coralville Lake (station 05453510) 36.1 mi (58.1 km) upstream since Sept. 17, 1958. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

COOPERATION.--Ten discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--21 years, 2,695 ft³/s (76.35 m³/s), 8.53 in/yr (217 mm/yr), 1,953,000 acre-ft/yr (2,410 hm³/yr). The figure published in the 1976 report was in error; the correct figure is 20 years, 2,793 ft³/s (79.10 m³/s), 8.84 in/yr (225 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,700 ft³/s (110 m³/s) May 19, 1974, gage height, 18.97 ft (5.782 m); maximum gage height, 20.27 ft (6.178 m) Sept. 22, 1965; minimum daily discharge, 69 ft³/s (1.95 m³/s) Aug. 4, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 28, 1944, reached a stage of 19.94 ft (6.078 m), discharge not determined, from information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,910 ft³/s (252 m³/s) Aug. 16, gage height, 11.91 ft (3.630 m); minimum daily, 69 ft³/s (1.95 m³/s) Aug. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	210	188	210	191	162	180	1300	364	144	392	76	4160
2	206	185	210	190	170	200	1220	343	150	212	76	4390
3	201	184	210	186	170	215	1140	322	144	125	75	5010
4	197	186	210	184	170	228	1140	327	142	105	69	3490
5	262	181	210	175	168	213	1240	370	174	94	71	3020
6	284	185	210	165	162	198	1190	357	172	86	86	2560
7	240	187	210	158	160	205	1120	364	144	83	731	2190
8	222	175	220	148	161	221	1060	377	143	83	5090	1920
9	210	172	215	140	162	247	960	419	143	82	4840	1680
10	206	173	205	136	163	242	910	352	140	79	1630	1590
11	197	167	197	132	185	266	877	328	155	77	695	1370
12	197	176	195	128	218	588	840	309	189	77	456	1300
13	197	175	200	130	232	690	808	297	176	76	325	1510
14	189	186	205	130	215	491	793	294	160	71	264	1680
15	189	180	210	132	185	343	782	290	147	78	232	1370
16	185	163	208	132	162	284	686	283	141	137	3670	1140
17	185	165	208	131	150	257	508	284	141	1050	7550	1110
18	181	202	208	138	138	249	417	234	148	985	6060	2620
19	193	204	208	148	130	275	405	217	155	310	3820	6960
20	197	206	205	150	120	465	418	282	215	171	4330	5810
21	186	202	150	152	110	529	612	351	157	141	4310	4990
22	183	204	215	154	102	552	696	428	120	155	4250	4810
23	183	217	205	154	120	568	572	226	109	103	4200	4680
24	186	234	200	158	150	618	493	184	111	90	4100	5430
25	188	207	204	158	134	610	483	184	171	172	3730	5640
26	187	208	200	160	130	761	478	177	122	144	3690	3670
27	188	210	198	160	140	1010	453	169	104	90	5880	4610
28	181	210	197	160	157	1090	449	157	102	79	4410	4540
29	182	220	188	156	---	1560	400	148	95	80	3870	3770
30	191	220	195	165	---	1760	378	147	208	78	4080	3640
31	199	---	192	162	---	1590	---	146	---	79	4160	---
TOTAL	6199	5742	6298	4763	4426	16705	22798	8730	4422	5583	86826	100580
MEAN	200	191	203	154	158	539	760	282	147	180	2801	3283
MAX	284	234	220	191	232	1760	1300	428	215	1050	7550	6960
MIN	181	153	150	128	102	180	778	146	95	71	69	1110
AC-FT	12300	11390	12490	9450	8780	33130	46220	17320	8770	11070	172208	199500

CAL YR 1976 TOTAL 615139 MEAN 1681 MAX 14700 MIN 150 AC-FT 1220000
WTR YR 1977 TOTAL 273072 MEAN 748 MAX 7550 MIN 69 AC-FT 541600

05457700 CEDAR RIVER AT CHARLES CITY, IA

LOCATION.--Lat 43°03'45", long 92°40'23". In SE1/4 NE1/4, sec.12, T.9S N., R.16 W., Floyd County, Hydrologic Unit 07080201, on right bank 800 ft (244 m) downstream from bridge on U.S. Highway 18 (Brantingham Street) in Charles City, 10.6 mi (17.1 km) upstream from Gizzard Creek, and at mile 252.9 (406.9 km) upstream from mouth of Iowa River.

DRAINAGE AREA.--1,084 mi² (2,730 km²).

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 973.02 ft (296.576 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. Occasional minor regulation by dam 0.2 mi (0.3 km) above gage. Daily wire-weight gage readings available in district office for period Sept. 13, 1945, to June 30, 1954, at same site and datum. Discharge not published for this period because of extreme regulation of streamflow by power dam 0.2 mi (0.3 km) upstream. Several observations of water temperature were made during the year. National Weather Service gage height telemeters at station.

AVERAGE DISCHARGE.--13 years, 646 ft³/s (18.28 m³/s), 8.32 in/yr (211 mm/yr), 468,000 acre-ft/yr (577 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,000 ft³/s (595 m³/s) Apr. 7, 1965, gage height, 18.14 ft (5.534 m); minimum gage height, 21.64 ft (6.596 m) Mar. 2, 1966, backwater from ice; minimum daily discharge, 50 ft³/s (1.40 m³/s) Nov. 23, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 27, 1961, reached a stage of 21.6 ft (6.58 m), from floodmarks, discharge, 24,200 ft³/s (687 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 564 ft³/s (16.5 m³/s) Mar. 13, gage height, 2.73 ft (0.832 m), no post above base of 2,500 ft³/s (71 m³/s); minimum gage height, 2.97 ft (0.905 m) Feb. 1, backwater from ice; minimum daily discharge, 60 ft³/s (1.70 m³/s) Nov. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	120	133	70	142	146	106	269	216	140	140	151	154
2	120	133	68	138	150	106	286	202	146	166	146	162
3	117	131	66	136	152	110	288	186	166	175	132	162
4	121	129	67	134	159	118	326	200	163	140	122	156
5	120	128	70	134	160	130	314	218	150	125	120	154
6	116	129	72	134	160	150	297	396	135	122	118	149
7	124	120	73	136	162	190	267	335	131	134	122	144
8	121	104	74	133	164	230	244	263	131	114	131	140
9	119	100	74	130	168	250	227	226	126	106	139	144
10	120	92	74	126	166	320	214	203	124	105	126	136
11	120	76	75	116	164	400	203	189	150	110	121	132
12	122	75	76	114	160	506	196	185	129	108	118	128
13	121	90	76	114	156	558	194	180	122	102	112	132
14	121	95	76	114	148	532	191	176	120	109	108	128
15	121	98	77	106	142	408	195	171	116	138	165	128
16	121	98	80	102	130	343	195	170	114	128	203	132
17	116	98	86	99	122	300	195	166	116	173	145	140
18	118	98	95	96	114	279	198	163	128	125	158	154
19	127	96	104	99	112	255	209	206	145	115	176	172
20	126	94	116	106	110	243	229	279	144	112	154	176
21	128	89	128	108	110	225	299	227	134	114	176	160
22	131	72	136	112	108	211	478	193	127	113	158	158
23	133	60	140	116	108	204	494	179	122	108	154	171
24	146	94	134	120	110	195	410	169	120	166	154	179
25	143	104	124	120	114	193	339	157	112	248	162	178
26	138	100	118	122	114	190	292	150	109	503	195	186
27	138	94	118	122	110	198	264	144	106	478	180	178
28	135	64	120	122	108	233	255	141	110	342	235	162
29	133	67	132	132	---	277	235	145	108	250	195	180
30	140	69	139	136	---	274	227	138	165	203	172	205
31	137	---	142	140	---	272	---	137	---	170	176	---
TOTAL	3913	2930	3000	3759	3826	8005	8020	6110	3909	5243	4804	4682
MEAN	126	97.7	96.8	121	137	258	267	197	130	169	155	156
MAX	146	133	142	142	168	558	494	396	166	503	203	205
MIN	116	60	66	96	108	106	191	137	106	102	108	128
CFSM	-12	-09	-09	-12	-13	-25	-25	-19	-12	-16	-15	-15
IN.	.14	.10	.11	.13	.14	.28	.28	.22	.14	.19	.17	.17
AC-FT	7760	5810	5950	7460	7590	15880	15910	12120	7750	10400	9530	9290

CAL YR 1976 TOTAL 119981 MEAN 328 MAX 7050 MIN 60 CFSM .31 IN 4.23 AC-FT 237900
 WTR YR 1977 TOTAL 58201 MEAN 159 MAX 558 MIN 60 CFSM .15 IN 2.05 AC-FT 115400

05450000 LITTLE CEDAR RIVER NEAR IONIA, IA

LOCATION.--Lat 43°02'05", long 92°30'05", in SW1/4 NE1/4 sec.21, T.9S N., R.14 W., Chickasaw County, Hydrologic Unit 07080201, on left bank 12 ft (4 m) downstream from bridge on county highway B57, 2.4 mi (3.9 km) west of Ionia, 6.4 mi (10.3 km) upstream from mouth, and 7.6 mi (12.2 km) downstream from Beaver Creek.

DRAINAGE AREA.--306 mi² (793 km²).

PERIOD OF RECORD.--October 1954 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1708: 1959.

GAGE.--Water-stage recorder. Datum of gage is 973.35 ft (296.677 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--23 years, 161 ft³/s (4.276 m³/s), 6.70 in/yr (170 mm/yr), 109,400 acre-ft/yr (135 km³/yr); median of yearly mean discharges, 130 ft³/s (3.68 m³/s), 5.0 in/yr (127 mm/yr), 84,200 acre-ft/yr (116 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,900 ft³/s (306 m³/s) Mar. 27, 1961, gage height, 15.58 ft (4.749 m); minimum daily, 3.0 ft³/s (0.085 m³/s) Feb. 4-9, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 22, 1954, reached a stage of 11.27 ft (3.466 m), discharge, 4,600 ft³/s (130 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 350 ft³/s (9.91 m³/s) Aug. 16, gage height, 4.69 ft (1.430 m), no peak above base of 1,200 ft³/s (34.0 m³/s); minimum daily, 3.4 ft³/s (0.096 m³/s) Jan. 22-Feb. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	23	11	7.5	3.4	21	85	40	51	23	23	95
2	16	22	10	7.3	3.4	23	83	37	43	20	23	72
3	16	21	9.2	7.0	3.4	26	88	35	50	24	21	67
4	16	22	8.5	6.7	3.4	32	106	41	43	33	20	54
5	16	21	9.2	6.6	3.4	29	100	47	36	21	19	49
6	16	19	9.6	6.3	3.4	30	86	53	30	16	17	45
7	16	15	9.6	6.0	3.4	30	74	47	26	21	17	43
8	16	12	9.7	6.0	3.4	42	64	42	27	22	33	39
9	17	18	9.8	5.9	3.5	90	58	38	24	21	40	36
10	17	19	9.8	5.8	3.7	150	53	35	22	16	37	33
11	18	15	9.8	5.7	3.8	180	50	33	25	14	33	31
12	20	12	9.8	5.6	4.2	200	46	32	24	13	30	33
13	22	19	9.8	5.4	4.8	230	47	30	21	11	26	31
14	21	20	9.5	5.2	5.8	176	43	28	20	11	22	29
15	17	23	9.2	5.0	6.0	140	42	26	19	16	47	26
16	16	21	9.1	4.9	5.6	100	41	25	18	14	221	25
17	16	24	9.6	4.8	5.8	84	40	25	19	47	70	27
18	17	23	10	4.6	6.0	72	40	24	19	40	47	30
19	19	19	10	4.4	6.2	60	40	23	18	37	51	29
20	21	17	11	3.6	6.5	30	41	24	18	34	50	41
21	22	20	11	3.5	7.0	54	57	26	16	28	49	44
22	21	17	10	3.4	7.4	48	80	36	16	22	44	43
23	21	15	10	3.4	10	47	99	33	16	19	42	46
24	26	23	9.6	3.4	15	47	91	30	15	30	39	67
25	24	28	9.4	3.4	16	46	71	25	14	74	36	61
26	23	20	9.9	3.4	17	43	59	23	13	69	48	64
27	23	15	9.9	3.4	18	46	52	25	12	53	62	66
28	22	14	9.0	3.4	20	51	49	24	13	48	138	59
29	22	13	9.0	3.4	---	58	45	29	13	39	113	58
30	24	12	8.3	3.4	---	60	42	24	25	33	124	66
31	23	---	8.0	3.4	---	60	---	90	---	27	130	---
TOTAL	899	862	250.9	152.0	199.7	2335	1822	1050	706	896	1672	1404
MEAN	19.3	18.7	9.63	4.90	7.13	78.3	60.7	33.9	23.5	28.9	53.9	46.8
MAX	26	28	11	7.5	20	230	106	90	51	74	221	95
MIN	16	12	8.0	3.4	3.4	21	40	23	12	11	17	25
CFSM	.06	.06	.03	.02	.02	.25	.20	.11	.08	.09	.18	.15
IN.	.07	.07	.04	.02	.02	.28	.22	.13	.09	.11	.20	.17
AC-FT	1190	1110	592	301	396	4630	3610	2080	1400	1780	3320	2780

CAL YR 1976 TOTAL 31975.5 MEAN 87.4 MAX 1460 MIN 8.0 CFSM .29 IN 3.89 AC-FT 63420
WTR YR 1977 TOTAL 11696.2 MEAN 32.0 MAX 230 MIN 3.4 CFSM .11 IN 1.42 AC-FT 23200

05489500 CEDAR RIVER AT JANESVILLE, IA

LOCATION.--Lat 42°38'54", long 92°27'54", in NE1/4 SW1/4 sec.35, T.91 N., R.14 W., Bremer County, Hydrologic Unit 07080201, on left bank 300 ft (91 m) downstream from bridge on county highway at Janesville, 3.6 mi (5.8 km) upstream from West Fork Cedar River, and at mile 207.7 (334.2 km) upstream from mouth of Iowa River.

DRAINAGE AREA.--1,661 mi² (4,301 km²).

PERIOD OF RECORD.--October 1904 to Sept. 1906, October 1914 to September 1927, October 1932 to September 1942, October 1945 to current year. Monthly discharge only for some periods, published in WSP 1306. Published as Red Cedar River at Janesville, 1905-6.

REVISED RECORDS.--WSP 1436: Drainage area. WSP 1558: 1905 (M), 1915-16 (M), 1917, 1918-19 (M), 1920-27, 1933-37 (M), 1940-42 (M).

GAGE.--Water-stage recorder. Datum of gage is 86R.26 ft (264.646 m) above mean sea level. Prior to July 26, 1919, nonrecording gage at site 1,000 ft (305 m) downstream at datum 4.9 ft (1.2 m) lower. July 26, 1919, to Sept. 30, 1927, Nov. 14, 1932, to Sept. 30, 1942, and Apr. 26, 1946, to Nov. 10, 1949, nonrecording gage at county bridge 300 ft (91 m) upstream at same datum.

REMARKS.--Records good except those for winter period, which are poor. Diurnal fluctuation during low water caused by powerplant at Waverly, 10 mi (16.1 km) upstream. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--57 years (1904-5, 1914-27, 1932-42, 1945-77), 771 ft³/s (21.83 m³/s), 6.30 in/yr (160 mm/yr), 558,600 acre-ft/yr (889 hm³/yr); median of yearly mean discharges, 700 ft³/s (19.8 m³/s), 5.7 in/yr (145 mm/yr), 507,000 acre-ft/yr (825 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,000 ft³/s (1,050 m³/s) Mar. 28, 1961, gage height, 16.33 ft (4.977 m); minimum daily, 28 ft³/s (0.79 m³/s) Oct. 21, 1922.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 17, 1945, reached a stage of 16.2 ft (4.94 m), from floodmark at site 300 ft (91 m) upstream, discharge, 34,300 ft³/s (971 m³/s). Flood of Mar. 16, 1929, reached a stage of about 16 ft (5 m), from information by City of Waterloo, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,460 ft³/s (69.7 m³/s) Sept. 18, gage height, 3.30 ft (1.006 m), no peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 98 ft³/s (2.78 m³/s) Dec. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	189	237	136	144	206	146	401	295	243	175	304	437
2	184	216	140	144	212	146	398	311	214	154	262	419
3	144	191	126	154	218	156	416	270	173	185	184	314
4	216	213	134	180	224	170	470	260	159	193	234	329
5	233	201	138	190	230	190	452	292	186	201	168	313
6	218	194	140	198	232	220	496	268	225	191	181	367
7	178	196	112	198	232	260	487	257	168	266	183	257
8	197	188	134	190	238	330	401	375	209	207	197	206
9	161	187	144	186	246	350	365	426	182	156	199	277
10	189	189	160	174	240	380	344	229	164	147	209	203
11	303	205	115	166	232	420	356	269	143	161	196	229
12	296	188	145	162	226	440	315	263	164	148	223	297
13	167	317	138	162	216	490	309	245	202	153	157	217
14	199	247	136	162	206	530	301	193	187	130	161	263
15	203	186	134	152	192	600	279	212	154	162	216	229
16	179	179	134	146	184	610	268	203	167	134	475	203
17	195	195	118	142	172	520	282	177	168	286	451	199
18	216	199	108	140	166	468	312	181	132	326	382	1780
19	205	180	114	140	162	406	284	217	149	258	332	1160
20	193	160	98	140	156	404	290	199	186	222	249	616
21	202	168	104	136	156	380	315	224	172	258	287	496
22	208	162	126	136	162	378	331	291	135	216	328	451
23	183	230	124	130	156	317	364	319	193	152	289	458
24	234	260	126	116	158	351	525	299	148	175	267	1050
25	224	140	124	106	156	294	576	201	146	214	253	926
26	223	180	126	126	156	269	503	252	151	188	426	698
27	231	200	124	142	156	303	433	210	175	281	483	556
28	212	210	128	162	156	341	387	151	161	448	499	500
29	215	125	126	176	---	312	338	185	162	506	616	480
30	197	130	132	192	---	357	294	185	163	357	485	517
31	216	---	136	200	---	390	---	198	---	322	484	---
TOTAL	6409	5843	3970	4892	5436	10948	11293	7667	5180	6972	9380	14547
MEAN	207	196	128	158	194	352	376	247	173	225	303	495
MAX	303	317	180	200	246	610	575	426	243	506	616	1780
MIN	144	125	98	108	152	146	268	151	132	130	157	199
CFSM	.13	.12	.08	.10	.12	.21	.23	.15	.12	.14	.18	.29
IN.	.14	.13	.09	.11	.12	.28	.25	.17	.12	.16	.21	.33
AC-FT	12710	11590	7870	9700	10780	21720	22400	15210	10270	13830	18610	28850

CAL YR 1976 TOTAL 197806 MEAN 540 MAX 7820 MIN 98 CFSM .33 IN 4.42 AC-FT 391800
WTR YR 1977 TOTAL 92537 MEAN 254 MAX 1780 MIN 98 CFSM .16 IN 2.07 AC-FT 102500

IOWA RIVER BASIN

05490900 WEST FORK CEDAR RIVER AT FINCHFORD, IA

LOCATION.--Lat. 42°37'50", long. 92°32'24", in SW1/4 SE1/4 sec. 8, T. 90 N., R. 14 W., Black Hawk County, Hydrologic Unit 07080204, on left bank 100 ft (30 m) downstream from bridge on county highway C55 at Finchford, 3.2 mi (5.1 km) upstream from Shell Rock River, and 8.0 mi (8.0 km) upstream from mouth.

DRAINAGE AREA.--846 mi² (2,191 km²).

PERIOD OF RECORD.--October 1948 to current year. Prior to October 1955, published as West Fork Shell Rock River at Finchford.

REVISED RECORDS.--VSP 1438: Drainage area. VSP 1955: 1946 (M), 1947.

GAGE.--Water-stage recorder. Datum of gage is 887.54 ft (264.426 m) above mean sea level. Prior to June 10, 1955, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. An authorized diversion is made into Big Marsh, 16 mi (25.7 km) upstream from gage, of 2,100 acre-ft each year between September 1 and November 15. Net effect on daily flows at gage is unknown. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--32 years, 439 ft³/s (12.43 m³/s), 7.05 in/yr (179 mm/yr), 318,100 acre-ft/yr (392 km³/yr); median of yearly mean discharges, 350 ft³/s (9.9 m³/s), 5.6 in/yr (142 mm/yr), 254,900 acre-ft/yr (313 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,900 ft³/s (903 m³/s) June 27, 1961, gage height, 17.28 ft (5.267 m), from floodmarks; minimum daily, 5.9 ft³/s (0.17 m³/s) Feb. 26, 27, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1929 reached a stage of about 14 ft (4 m), from information by local resident, discharge, about 12,800 ft³/s (362 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 387 ft³/s (11.0 m³/s) Sept. 24, gage height, 5.72 ft (1.743 m), no peak above base of 2,800 ft³/s (79.8 m³/s); minimum daily, 12 ft³/s (0.34 m³/s) Jan. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	29	42	27	19	128	149	120	73	27	17	212
2	27	29	41	27	19	120	156	115	87	26	18	163
3	27	31	44	27	19	132	166	111	61	26	19	138
4	26	30	48	27	19	140	221	113	62	28	20	113
5	26	30	47	27	21	140	268	114	48	28	20	102
6	26	30	41	27	22	142	262	123	46	29	18	96
7	26	30	42	26	23	180	231	135	44	33	20	88
8	26	30	45	27	24	196	201	140	41	27	20	77
9	26	42	47	26	25	180	183	127	39	26	20	69
10	26	42	47	27	27	172	166	115	43	26	20	64
11	26	40	49	26	29	212	155	107	40	26	20	62
12	26	37	49	28	30	264	145	101	39	22	20	50
13	26	41	42	29	36	300	138	90	35	20	20	62
14	25	30	37	27	40	275	134	84	33	19	20	50
15	25	38	34	27	41	212	129	79	32	16	22	46
16	25	36	33	25	42	187	125	75	30	21	34	44
17	25	43	32	23	41	170	123	71	39	42	62	67
18	24	34	31	22	43	165	123	68	41	42	343	144
19	26	27	32	21	45	157	120	64	32	30	279	264
20	26	30	31	20	46	180	118	62	31	30	188	359
21	24	28	29	20	48	145	128	69	30	30	110	301
22	24	26	27	19	50	138	136	68	29	21	91	220
23	28	25	28	18	56	134	172	65	28	22	76	185
24	33	30	29	17	68	129	243	63	32	23	58	333
25	29	34	30	12	75	118	207	60	32	23	46	365
26	31	29	29	13	79	115	175	54	29	22	87	348
27	33	26	27	14	100	117	154	58	27	18	69	294
28	32	31	26	14	120	123	143	62	27	17	154	232
29	32	35	25	15	---	126	132	62	26	18	206	195
30	33	39	24	16	---	135	125	66	39	19	268	270
31	32	---	27	17	---	147	---	65	---	19	281	---
TOTAL	846	982	1115	590	1205	5048	4928	2706	1185	826	2616	5033
MEAN	27.3	32.7	36.0	22.3	42.0	163	164	87.3	39.5	26.6	84.4	168
MAX	33	43	49	28	120	300	268	140	87	83	343	365
MIN	24	25	24	12	18	115	118	54	26	16	17	44
CFSM	.03	.04	.04	.03	.05	.19	.19	.10	.05	.03	.10	.20
IN.	.04	.04	.05	.03	.05	.22	.22	.12	.05	.04	.12	.22
AC-FT	1689	1950	2210	1370	2390	10010	9770	5370	2350	1640	5190	9980

CAL YR 1976 TOTAL 98166 MEAN 268 MAX 3040 MIN 24 CFSM .32 IN 4.32 AC-FT 194700
WTR YR 1977 TOTAL 27180 MEAN 74.5 MAX 365 MIN 12 CFSM .09 IN 1.20 AC-FT 53910

IOWA RIVER BASIN

83

05459000 SHELL ROCK RIVER NEAR NORTHWOOD, IA

LOCATION.--Lat 43°24'51", long 93°13'14", in NW1/4 NW1/4 sec.9, T.99 N., R.20 W., Worth County, Hydrologic Unit 07000202, on right bank 50 ft (15 m) downstream from bridge on county highway A27, 1.3 mi (2.1 km) downstream from Drainage ditch 2, 2.0 mi (3.2 km) south of Northwood, 3.7 mi (6.0 km) upstream from Elk Creek, and 84.5 mi (136.0 km) upstream from mouth.

DRAINAGE AREA.--300 mi² (777 km²).

PERIOD OF RECORD.--October 1945 to current year. Prior to April 1948 monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1948 (M). WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,176.48 ft (358.591 m) above mean sea level. Prior to May 17, 1956, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--32 years, 140 ft³/s (3,965 m³/s), 6.34 in/yr (161 mm/yr), 101,400 acre-ft/yr (126 hm³/yr); median of yearly mean discharges, 120 ft³/s (3,400 m³/s), 5.4 in/yr (137 mm/yr), 86,900 acre-ft/yr (107 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,400 ft³/s (96.3 m³/s) Apr. 8, 1965, gage height, 12.07 ft (3.679 m), backwater from ice; no flow Jan. 14-19, 26-30, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 327 ft³/s (9.26 m³/s) Mar. 11, affected by ice, no peak above base of 700 ft³/s (19.0 m³/s); maximum gage height, 6.19 ft (1.887 m) Mar. 6, backwater from ice; no flow Jan. 11-19, 26-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.0	9.9	10	2.4	.01	11	66	37	14	34	15	27
2	8.2	9.3	9.9	1.1	.01	14	72	34	17	27	17	29
3	9.9	9.3	9.7	.70	.02	17	99	33	14	24	13	26
4	9.3	9.3	9.5	.48	.02	21	91	35	12	18	12	24
5	8.9	9.4	9.3	.30	.03	26	94	49	13	15	12	23
6	8.7	9.5	9.2	.21	.03	31	99	57	11	15	11	25
7	8.6	9.8	9.0	.14	.03	40	78	52	14	17	10	29
8	8.8	10	8.8	.08	.04	60	69	47	16	16	11	28
9	8.4	11	8.6	.05	.04	76	58	43	13	16	12	23
10	8.9	12	8.3	.04	.08	90	51	39	14	16	11	23
11	9.6	12	8.1	.03	.15	102	47	35	16	14	10	20
12	8.8	12	7.9	.02	.35	108	45	32	12	10	10	19
13	8.5	13	7.6	.01	.64	110	47	29	14	9.1	9.3	19
14	8.6	13	7.3	.00	1.4	108	53	27	15	8.1	8.5	19
15	7.4	13	7.1	.00	1.5	107	49	27	12	11	12	19
16	8.3	12	6.7	.00	1.7	77	47	25	18	11	23	17
17	8.3	12	6.3	.00	1.6	63	48	26	18	11	15	13
18	8.7	11	5.0	.00	1.9	60	57	26	18	11	15	40
19	9.1	11	5.7	.00	2.0	55	74	24	18	9.4	20	33
20	9.8	12	5.5	.01	2.2	51	85	24	20	8.4	19	34
21	9.4	12	5.3	.01	2.4	47	110	27	18	8.7	27	32
22	9.4	12	5.3	.02	3.0	46	116	28	17	9.4	27	24
23	9.4	12	5.1	.02	3.9	43	94	25	14	9.4	29	25
24	10	12	5.0	.02	5.0	42	83	23	12	15	28	30
25	10	11	4.8	.01	5.8	40	79	21	12	19	28	27
26	10	11	4.6	.00	6.5	39	65	20	9.5	20	29	26
27	9.8	11	4.4	.00	7.8	46	56	18	9.2	20	26	26
28	9.8	11	4.2	.00	9.4	49	50	17	8.9	20	24	25
29	9.8	10	3.9	.00	---	63	47	17	9.1	18	25	24
30	9.8	10	3.8	.00	---	64	41	16	35	18	27	31
31	9.8	---	3.0	.01	---	67	---	15	---	16	29	---
TOTAL	282.0	332.5	209.7	9.66	57.85	1773	2070	928	443.8	474.5	554.9	763
MEAN	9.10	11.1	6.76	.18	2.07	57.2	69.0	29.9	14.8	15.3	18.2	25.4
MAX	10	13	10	2.4	9.4	110	116	57	35	34	29	40
MIN	7.4	9.3	3.0	.00	.01	11	41	15	8.9	8.1	8.5	13
CFSM	.03	.04	.02	.001	.007	.19	.23	.10	.05	.09	.06	.09
IN.	.03	.04	.02	.00	.01	.22	.26	.12	.06	.06	.07	.09
AC-FT	559	660	416	11	118	3520	4110	1640	980	941	1120	1610

CAL YR 1976 TOTAL 23688.30 MEAN 64.7 MAX 678 MIN 3.0 CFSM .22 IN 2.94 AC-FT 46990
WTR YR 1977 TOTAL 7904.81 MEAN 21.7 MAX 116 MIN .0 CFSM .07 IN .98 AC-FT 15680

IOWA RIVER BASIN

05489500 WINNEBAGO RIVER AT MASON CITY, IA

LOCATION.--Lat 43°09'54", long 93°11'33", in NE1/4 NW1/4 sec.3, T.96 N., R.20 W., Cerro Gordo County, Hydrologic Unit 07080203, on right bank 650 ft (198 m) upstream from Thirteenth Street Bridge in Mason City, Ia. 1 mi (0.2 km) downstream from Calmus Creek, and 1.0 mi (1.6 km) upstream from Willow Creek.

DRAINAGE AREA.--526 mi² (1,362 km²).

PERIOD OF RECORD.--October 1932 to current year. Prior to December 1932, monthly discharge only, published in WSP 1308. Prior to October 1959, published as Lime Creek at Mason City.

REVISED RECORDS.--WSP 825: 1935-36, WSP 1438: Drainage area. WSP 1558: 1933-37, 1943 (M), 1945, 1948.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,059.59 ft (322.011 m) above mean sea level. Prior to Oct. 18, 1934, nonrecording gage at datum 8.47 ft (1.97 m) lower. Oct. 18 to Nov. 5, 1934, nonrecording gage at different datum, and Nov. 7, 1934, to Mar. 22, 1935, nonrecording gage at present datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--45 years, 235 ft³/s (6.655 m³/s), 6.07 in/yr (154 mm/yr), 170,300 acre-ft/yr (210 hm³/yr); median of yearly mean discharges, 200 ft³/s (5.65 m³/s), 5.2 in/yr (132 mm/yr), 145,000 acre-ft/yr (179 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s (306 m³/s) Mar. 30, 1933, gage height, 15.7 ft (4.79 m), present datum; minimum daily, 2.5 ft³/s (0.071 m³/s) Dec. 29-31, 1933, Aug. 5, 1934.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 350 ft³/s (10.2 m³/s) May 5, gage height, 4.26 ft (1.298 m), no peak above base of 2,000 ft³/s (56.6 m³/s); minimum daily, 4.5 ft³/s (0.13 m³/s) Jan. 30, 31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	32	12	9.8	4.6	16	84	59	22	85	14	15
2	15	26	12	9.5	4.7	15	132	50	20	85	14	14
3	18	22	12	9.2	4.8	17	183	45	20	45	14	14
4	20	19	12	9.0	5.0	20	171	80	22	36	17	13
5	19	18	13	8.8	5.3	21	148	282	23	25	19	12
6	22	20	13	8.5	5.6	23	117	252	19	27	17	12
7	20	22	14	8.3	5.8	25	107	150	15	27	16	12
8	18	19	14	8.2	6.0	42	88	105	15	35	17	13
9	19	26	15	8.0	6.5	76	79	83	15	25	20	13
10	20	15	15	7.7	7.2	95	67	59	24	23	25	13
11	20	14	15	7.4	8.0	120	55	58	158	24	21	11
12	19	20	15	7.1	9.1	155	51	49	119	23	19	10
13	20	22	15	6.9	9.4	154	55	50	59	19	17	15
14	21	23	15	6.7	9.4	150	57	50	35	23	15	9.8
15	23	25	15	5.5	8.7	128	58	49	28	25	31	11
16	19	24	15	5.4	8.8	101	58	55	52	25	35	12
17	21	24	14	5.2	9.3	93	57	44	48	25	73	22
18	25	24	14	5.8	9.7	85	59	39	47	20	29	51
19	34	24	14	5.5	10	80	55	34	37	23	25	51
20	35	23	13	5.4	11	74	118	40	34	24	33	50
21	39	21	12	5.3	11	70	275	45	30	18	28	37
22	37	18	12	5.3	11	67	235	54	32	19	24	25
23	39	23	12	5.2	21	60	164	50	28	22	14	28
24	48	27	11	5.1	32	58	129	105	24	16	14	21
25	54	31	11	5.0	30	50	103	77	19	14	15	27
26	58	35	11	4.9	28	51	91	50	15	13	15	22
27	54	14	11	4.8	23	74	75	39	15	14	15	20
28	50	13	11	4.7	18	78	85	33	15	18	17	18
29	45	13	10	4.6	---	101	82	27	15	19	15	17
30	45	12	10	4.5	---	107	78	24	51	17	14	25
31	48	---	9.9	4.5	---	87	---	24	---	15	14	---
TOTAL	934	549	397.9	284.9	322.9	2316	3152	2177	1884	801	555	554.8
MEAN	30.1	21.6	12.8	9.61	11.5	74.7	105	70.2	35.1	25.5	21.3	22.2
MAX	58	35	15	9.8	32	155	275	282	158	85	73	51
MIN	15	12	9.9	4.5	4.5	15	51	24	15	13	14	9.8
CFSM	.06	.04	.02	.01	.02	.14	.20	.13	.07	.05	.04	.04
IN.	.07	.05	.03	.01	.02	.16	.22	.15	.08	.06	.05	.05
AC-FT	1950	1290	789	456	540	4590	5250	4320	2150	1590	1310	1320

CAL YR 1976 TOTAL 46414.9 MEAN 127 MAX 1550 MIN 9.9 CFSM .24 IN 3.28 AC-FT 92060
WTR YR 1977 TOTAL 13363.5 MEAN 38.6 MAX 282 MIN 4.5 CFSM .07 IN .95 AC-FT 26510

05460000 CLEAR LAKE AT CLEAR LAKE, IA

LOCATION.--Lat. 43°08'01", long 93°22'57", in SE1/4 NE1/4 sec.13, T.96 N., R.22 W., Cerro Gordo County, Hydrologic Unit 07080203, at the public bathing beach in the town of Clear Lake near dam across Clear Creek.

DRAINAGE AREA.--22.6 mi² (59.5 km²).

PERIOD OF RECORD.--May 1933 to current year. No winter records 1933-52. Record fragmentary November 1952 to June 1959.

GAGE.--Water-stage recorder. Datum of gage is 1,222.24 ft (372.539 m) above mean sea level, and 4.60 ft (1.40 m) below crest of spillway of dam at outlet. See WSP 1708 for history of changes prior to June 25, 1959.

REMARKS.--Lake is formed by concrete dam on Clear Creek with ungated overflow spillway 50 ft (15 m) long at elevation 1,226.84 ft (373.941 m) above mean sea level. Dam constructed in 1903. A previous outlet works had been constructed in 1837. Lake is used for conservation and recreation. Area of lake is approximately 3,500 acres (1,460 ha²).

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 5.94 ft (1.811 m) July 3, 1951; minimum observed, 1.16 ft (0.354 m) Dec. 20, 22-24, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 2.99 ft (0.911 m) Apr. 27; minimum, 1.91 ft (0.582 m) Sept. 17.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.85	2.65	---	2.43	2.41	2.44	2.70	2.68	2.78	2.50	2.16	2.10
2	2.84	2.66	---	2.43	2.41	2.44	2.77	2.80	2.72	2.45	2.15	2.09
3	2.83	2.67	---	2.43	2.41	2.45	2.80	2.78	2.70	2.41	2.14	2.08
4	2.83	2.64	---	2.43	2.41	2.49	2.83	2.79	2.70	2.40	2.11	2.07
5	2.82	2.63	---	2.43	2.41	2.54	2.85	2.80	2.68	2.40	2.09	2.06
6	2.80	2.62	---	2.43	2.40	2.60	2.83	2.82	2.65	2.39	2.07	2.04
7	2.77	2.62	---	2.43	2.40	2.60	2.80	2.83	2.62	2.39	2.06	2.03
8	2.78	2.60	---	2.43	2.40	2.58	2.77	2.84	2.61	2.38	2.05	2.02
9	2.77	2.59	---	2.43	2.40	2.56	2.76	2.85	2.58	2.38	2.05	2.04
10	2.75	2.59	---	2.43	2.42	2.56	2.82	2.85	2.56	2.38	2.05	2.03
11	2.75	---	---	2.43	2.45	2.57	2.85	2.86	2.60	2.38	2.05	2.02
12	2.74	---	---	2.43	2.46	2.61	2.81	2.87	2.57	2.38	2.04	1.99
13	2.73	---	---	2.43	2.46	2.65	2.76	2.87	2.54	2.37	2.03	1.96
14	2.73	---	---	2.43	2.45	2.65	2.72	2.86	2.53	2.35	2.02	1.95
15	2.73	---	---	2.43	2.44	2.64	2.71	2.85	2.51	2.35	2.06	1.94
16	2.70	---	---	2.43	2.43	2.63	2.71	2.86	2.53	2.35	2.15	1.92
17	2.67	---	---	2.43	2.42	2.63	2.75	2.85	2.55	2.35	2.24	---
18	2.64	---	---	2.43	2.42	2.65	2.82	2.85	2.56	2.34	2.21	---
19	2.63	---	---	---	2.41	2.64	2.84	2.84	2.54	2.34	2.19	---
20	2.65	---	---	---	2.40	2.64	2.83	2.81	2.51	2.33	2.15	---
21	2.67	---	---	---	2.40	2.64	2.83	2.77	2.47	2.31	2.15	---
22	2.66	---	---	---	2.40	2.63	2.84	2.80	2.45	2.30	2.14	---
23	2.63	---	---	---	2.41	2.63	2.85	2.85	2.45	2.28	2.12	---
24	2.64	---	---	---	2.43	2.62	2.88	2.87	2.44	2.27	2.10	---
25	2.67	---	---	---	2.45	2.62	2.92	2.85	2.43	2.25	2.08	---
26	2.66	---	---	---	2.45	2.62	2.94	2.81	2.42	2.23	2.07	2.13
27	2.66	---	2.45	---	2.45	2.64	2.95	2.81	2.41	2.20	2.08	2.10
28	2.70	---	2.45	---	2.44	2.65	2.89	2.81	2.42	2.20	2.10	2.08
29	2.73	---	2.44	---	---	2.77	2.88	2.80	2.40	2.20	2.10	2.10
30	2.69	---	2.44	---	---	2.79	2.87	2.79	2.47	2.18	2.09	2.10
31	2.67	---	2.44	---	---	2.75	---	2.81	---	2.18	2.09	---
MEAN	2.72	---	---	---	2.42	2.61	2.82	2.83	2.55	2.33	2.10	---
MAX	2.85	---	---	---	2.46	2.79	2.95	2.88	2.78	2.50	2.24	---
MIN	2.63	---	---	---	2.40	2.44	2.70	2.77	2.40	2.18	2.02	---

IOWA RIVER BASIN

05452000 SHELL ROCK RIVER AT SNELL ROCK, IA

LOCATION.--Lat 42°39'10", long 92°35'46", in NE1/4 NW1/4 sec.11, T.91 N., R.15 W., Butler County, Hydrologic Unit 07080202, on right bank 400 ft (122 m) upstream from bridge on county highway C48 in Shell Rock, 2.2 mi (3.5 km) downstream from Curry Creek, and 10.4 mi (16.7 km) upstream from mouth.

DRAINAGE AREA.--1,746 mi² (4,522 km²).

PERIOD OF RECORD.--June 1953 to current year. Prior to July 1953, monthly discharge only, published in WSP 1728.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Rockfill dam since Oct. 19, 1957. Datum of gage is 885.34 ft (269.852 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. Diurnal fluctuation at low stages caused by powerplant at Greene. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--24 years, 829 ft³/s (23.76 m³/s), 6.53 in/yr (166 mm/yr), 607,900 acre-ft/yr (750 hm³/yr); median of yearly mean discharges, 680 ft³/s (19.3 m³/s), 5.3 in/yr (135 mm/yr), 493,000 acre-ft/yr (608 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,500 ft³/s (949 m³/s) Mar. 29, 1961, gage height, 16.26 ft (4.956 m); minimum daily, 38 ft³/s (1.08 m³/s) Feb. 9, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1856 reached a stage of 17.7 ft (5.39 m) at bridge 400 ft (122 m) downstream, from information furnished by Corps of Engineers, discharge, about 45,000 ft³/s (1,270 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,220 ft³/s (34.6 m³/s) Sept. 18, gage height, 8.49 ft (2.588 m) no peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 38 ft³/s (1.08 m³/s) Feb. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	189	180	116	86	48	161	304	275	174	132	112	148
2	134	152	101	83	45	149	335	257	183	200	97	130
3	127	170	86	84	45	150	374	230	136	206	98	124
4	128	180	88	84	49	159	483	229	127	190	93	119
5	139	188	105	86	47	142	487	262	127	161	99	118
6	135	152	103	85	45	139	428	596	127	140	84	109
7	139	146	80	85	43	148	391	644	119	145	84	102
8	143	142	78	86	40	163	363	469	117	129	84	94
9	154	137	83	84	38	195	338	377	108	135	108	89
10	151	136	101	84	42	276	309	328	95	121	100	91
11	139	140	94	82	55	347	287	289	102	116	93	83
12	146	150	94	80	55	408	264	264	149	120	84	113
13	152	155	90	77	71	496	253	239	248	103	80	122
14	149	162	89	77	87	499	247	221	218	98	83	100
15	151	172	97	77	66	457	247	207	171	98	108	88
16	153	160	105	76	79	439	248	199	155	101	367	88
17	142	165	111	72	73	364	250	190	156	136	193	94
18	143	162	115	72	72	356	252	186	161	118	197	776
19	155	165	121	70	88	313	258	174	155	106	193	404
20	160	168	97	70	91	279	293	175	139	106	163	333
21	161	162	97	72	116	273	380	180	134	109	143	305
22	164	101	105	74	123	258	696	173	143	88	127	273
23	162	103	101	76	143	249	663	172	131	80	127	273
24	183	170	99	77	186	229	631	181	126	57	127	374
25	178	170	101	78	192	221	420	177	126	47	115	315
26	171	148	101	76	208	207	376	235	114	47	210	297
27	170	140	99	75	210	217	346	217	101	48	185	264
28	163	133	97	65	183	233	322	186	104	85	249	244
29	162	127	94	59	---	269	316	176	99	94	220	237
30	165	129	94	52	---	296	299	177	111	118	196	250
31	171	---	89	51	---	322	---	188	---	124	159	---
TOTAL	4750	4504	3031	2357	2530	8454	10770	7854	4126	3528	4358	6157
MEAN	153	150	97.8	76.0	80.4	273	359	253	138	114	141	205
MAX	183	172	121	86	210	499	696	644	248	206	367	776
MIN	127	101	78	51	38	139	247	168	95	47	84	83
CFSM	.09	.09	.06	.04	.05	.16	.21	.15	.08	.07	.08	.12
IN.	.10	.10	.08	.05	.05	.18	.23	.17	.09	.06	.09	.13
AC-FT	9420	8930	6010	4680	5020	16770	21360	18580	8180	7000	9640	12210

CAL YR 1976 TOTAL 181678 MEAN 496 MAX 6260 MIN 78 CFSM .28 IN 3.87 AC-FT 380400
 VTR YR 1977 TOTAL 62419 MEAN 171 MAX 776 MIN 38 CFSM .10 IN 1.33 AC-FT 123800

08463000 BEAVER CREEK AT NEW HARTFORD, IA

LOCATION.--Lat 42°30'50", long 92°37'55", in SE1/4 SE1/4 sec.28, T.90 N., R.15 W., Butler County, Hydrologic Unit 07080205, on downstream side of center bridge pier of bridge on county highway T85, 0.2 mi (0.3 km) north of New Hartford, and 8 mi (12.9 km) upstream from mouth.

DRAINAGE AREA.--347 mi² (899 km²).

PERIOD OF RECORD.--October 1945 to current year. Prior to April 1948, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1948-49. WSP 1708: 1947 (M).

GAGE.--Water-stage recorder. Datum of gage is 882.44 ft (268.968 m) above mean sea level. Prior to July 14, 1959, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--32 years, 183 ft³/s (5.183 m³/s), 7.16 in/yr (182 mm/yr), 132,600 acre-ft/yr (163 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,000 ft³/s (510 m³/s) June 13, 1947, gage height, 13.5 ft (4.11 m), from graph based on gage readings, from rating curve extended above 14,000 ft³/s (396 m³/s); minimum daily, 2.3 ft³/s (0.065 m³/s) Jan. 20-24, 1956, Jan. 24, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 172 ft³/s (4.87 m³/s) Aug. 29, gage height, 3.19 ft (0.972 m), no peak above base of 1,400 ft³/s (39.6 m³/s); minimum daily, 2.3 ft³/s (0.065 m³/s) Jan. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	22	12	6.0	3.1	33	44	28	19	10	4.2	85
2	13	21	11	6.2	3.5	29	55	27	17	8.5	4.1	70
3	14	20	10	6.3	3.7	25	71	26	16	8.0	3.8	60
4	14	19	10	6.2	4.3	35	73	27	15	8.6	3.7	60
5	15	19	10	6.0	4.9	38	76	31	14	7.9	4.6	45
6	16	19	9.6	6.0	5.6	42	69	30	13	8.7	5.3	42
7	16	20	9.4	6.1	6.7	47	62	28	12	17	7.0	40
8	16	29	9.2	6.1	8.3	52	56	27	12	12	8.5	38
9	15	20	8.8	5.8	9.6	54	50	25	11	10	8.5	35
10	16	20	8.6	5.5	11	60	46	24	11	9.4	10	33
11	16	25	8.4	5.4	12	80	43	24	14	8.8	8.6	31
12	16	29	8.1	5.4	13	94	39	23	12	7.7	8.0	31
13	16	28	8.0	5.3	14	82	38	22	11	7.1	7.4	30
14	15	28	7.4	5.0	15	63	37	21	10	6.8	6.8	28
15	15	27	7.1	4.8	15	55	37	21	9.6	6.5	7.5	27
16	16	30	6.6	4.5	17	49	35	21	9.5	6.4	19	26
17	15	28	6.4	4.3	19	46	35	21	13	7.1	20	27
18	16	25	6.2	4.0	20	45	37	20	12	6.6	39	36
19	18	24	5.9	3.9	21	44	34	19	14	6.6	36	36
20	18	23	5.5	3.5	22	43	34	19	13	6.7	30	42
21	19	23	5.5	3.0	22	41	35	20	12	7.6	26	41
22	18	22	5.6	2.7	22	39	38	21	10	7.2	25	38
23	19	36	5.7	2.5	23	37	37	21	10	7.5	24	43
24	24	31	6.0	2.3	31	36	35	19	11	8.5	21	65
25	25	17	6.0	2.9	34	34	33	18	13	7.8	19	94
26	25	14	6.1	3.1	34	32	32	17	14	6.9	46	97
27	22	16	6.0	3.0	34	33	31	17	13	6.4	35	81
28	21	13	6.7	2.9	34	37	31	16	11	5.9	59	69
29	21	12	5.7	3.0	---	46	30	39	9.3	5.4	152	63
30	22	12	5.8	2.8	---	51	29	27	14	5.1	149	105
31	23	---	5.9	2.9	---	48	---	19	---	4.7	110	---
TOTAL	549	672	232.2	137.4	462.7	1450	1303	718	375.4	243.8	908.0	1508
MEAN	17.7	22.4	7.49	4.43	16.5	46.8	43.4	23.2	12.5	7.86	29.3	50.3
MAX	26	36	12	6.3	34	94	76	39	19	17	152	105
MIN	13	12	5.6	2.3	3.1	25	29	16	9.3	4.7	3.7	26
CFSM	.05	.07	.02	.01	.06	.14	.13	.07	.04	.02	.08	.15
IN.	.06	.07	.02	.01	.05	.16	.14	.08	.04	.03	.10	.16
AC-FT	1090	1330	461	273	918	2880	2580	1420	745	484	1800	2990

CAL YR 1976 TOTAL 52688.2 MEAN 144 MAX 3980 MIN 5.5 CFSM .42 IN 5.68 AC-FT 104500
WTR YR 1977 TOTAL 8559.5 MEAN 23.5 MAX 152 MIN 2.3 CFSM .07 IN .92 AC-FT 16980

IOWA RIVER BASIN

00403000 CEDAR RIVER AT CEDAR FALLS, IA

WATER-QUALITY RECORDS

LOCATION.--Lat 42°32'20", long 92°26'00", in NW1/4 NE1/4 sec.12, T.09 N., R.14 W., Black Hawk County, Hydrologic Unit 07080200, at bridge on U.S. Highway 20 at Cedar Falls, 1.1 mi (1.8 km) upstream from Dry Run, and at mile 196.0 (315.4 km) above mouth of Iowa River.

DRAINAGE AREA.--4,734 mi² (12,281 km²).

PERIOD OF RECORD.--Water years 1976 to current year.

REMARKS.--Water discharge estimated on basis of records at gaging station 0.1 mi (0.2 km) downstream at Waterloo. No significant inflow between gaging station and sampling site.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TOTAL CAL- CIUM (CA) (MG/L) (00916)	TOTAL MAG- NE- SIUM (MG) (MG/L) (00927)	TOTAL SODIUM (NA) (MG/L) (00929)	TOTAL PO- TAS- SIUM (K) (MG/L) (00937)	SICAR- BORATE (CO3) (MG/L) (00440)	CAR- BORATE (CO3) (MG/L) (00445)	ALKA- LINIT- AS CACCS (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)
OCT											
20...	1250	534	46	19	13	2.5	200	0	164	38	21
NOV											
22...	1310	500	51	22	16	2.1	245	0	201	44	25
DEC											
21...	1030	412	53	27	19	2.7	299	0	245	46	27
JAN											
17...	1245	350	56	18	17	2.5	311	0	255	44	25
FEB											
15...	1240	460	52	19	14	2.1	258	0	212	35	23
MAR											
22...	1100	1030	55	19	15	3.4	221	0	181	42	26
MAY											
04...	0900	800	54	23	17	4.9	190	0	150	55	25
JUN											
01...	0930	550	52	23	19	6.0	240	1	200	45	24
JUL											
05...	1140	490	--	--	--	--	--	0	--	--	--
AUG											
05...	1400	416	39	19	15	2.9	190	0	150	34	22
SEP											
07...	0920	750	55	19	15	3.0	210	0	170	35	22

DATE	TOTAL NITRITE PLUS NITRATE (N) (00630)	TOTAL AMMONIA NITRO- GEN (N) (00610)	TOTAL ORGANIC NITRO- GEN (N) (00605)	TOTAL KJEL- DAHL NITRO- GEN (N) (00625)	TOTAL NITRO- GEN (N) (00600)	TOTAL NITRO- GEN (N) (71887)	TOTAL PHOS- PHORUS (P) (00665)	DIS- SOLVED SOLIDS (RESI- DUE AT 100 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (MG/L) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (MG/L) (70302)
OCT										
20...	.58	.62	1.3	1.9	2.8	11	.17	275	.37	395
NOV										
22...	2.1	.10	1.3	1.4	3.6	16	.20	317	.43	435
DEC										
21...	3.2	.34	.83	.87	4.1	18	.25	370	.50	412
JAN										
17...	3.7	.71	.25	.98	4.7	21	.33	370	.51	387
FEB										
15...	3.1	.89	.28	.95	4.0	17	.31	337	.46	419
MAR										
22...	1.9	.89	1.6	1.9	3.8	17	.32	360	.49	1000
MAY										
04...	.32	.42	1.8	2.2	3.5	11	.22	275	.37	594
JUN										
01...	1.1	.00	.95	.95	2.1	9.1	.30	316	.43	489
JUL										
05...	--	--	--	--	--	--	--	--	--	--
AUG										
05...	.46	.01	2.4	2.4	2.9	13	.21	225	.31	284
SEP										
07...	.89	.27	.93	1.2	2.1	9.3	.15	275	.38	589

IOWA RIVER BASIN

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05463050 CEDAR RIVER AT CEDAR FALLS, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL RESI- DUE (MG/L) (00800)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00490)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (NTU) (00078)	DIS- SOLVED OXYGEN (MG/L) (00300)	PER- CENT SATUR- ATION (00301)	CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340)	CARBON DIOXIDE (CO2) (MG/L) (00405)	FECAL COLI- FORM .7UM-MF (COL./ 100 ML) (31625)
OCT 20...	290	420	8.3	8.0	8.0	12.2	101	10	1.6	100
NOV 22...	346	520	8.0	1.0	4.0	13.4	94	19	3.9	93
DEC 21...	377	650	8.1	.0	2.0	12.9	88	11	3.8	250
JAN 17...	398	550	8.2	.0	1.0	13.8	95	7	3.1	880
FEB 15...	344	520	7.7	.5	2.0	10.8	75	12	8.2	140
MAR 22...	380	540	8.3	3.5	8.0	12.0	90	3	1.8	140
MAY 04...	330	430	8.8	17.5	13	--	--	26	.5	--
JUN 01...	387	430	8.7	21.0	17	--	--	35	.8	--
JUL 05...	--	440	8.8	25.0	--	--	--	--	--	--
AUG 05...	256	--	8.3	26.0	10	--	--	35	1.4	--
SEP 07...	316	470	8.7	22.5	17	--	--	34	.7	140

IOWA RIVER BASIN

05463500 BLACK HAWK CREEK AT HUDSON, IA

LOCATION.--Lat 42°24'28", long 92°27'47", in SW1/4 NE1/4 sec.27, T.88 N., R.14 W., Black Hawk County, Hydrologic Unit 07080205, on left bank 35 ft (11 m) downstream from bridge on State Highway 58, 0.2 mi (0.3 km) northwest of Chicago Great Western Railway tracks at the west edge of Hudson, 4.6 mi (7.2 km) upstream from Prescotts Creek, and 9.6 mi (15.4 km) upstream from mouth.

DRAINAGE AREA.--303 mi² (785 km²).

PERIOD OF RECORD.--April 1952 to current year.

REVISED RECORDS.--VSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 865.03 ft (263.661 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--25 years, 155 ft³/s (4.390 m³/s), 5.95 in/yr (177 mm/yr), 112,300 acre-ft/yr (138 hm³/yr); median of yearly mean discharges, 120 ft³/s (3.40 m³/s), 5.4 in/yr (137 mm/yr), 85,900 acre-ft/yr (107 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,300 ft³/s (547 m³/s) July 9, 1969, gage height, 18.23 ft (5.557 m); minimum daily, 0.12 ft³/s (0.003 m³/s) Jan. 26, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 196 ft³/s (5.55 m³/s) Sept. 18, gage height, 6.60 ft (2.012 m), no peak above base of 1,200 ft³/s (34.0 m³/s); minimum daily, 0.12 ft³/s (0.003 m³/s) Jan. 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	16	14	4.6	2.3	50	29	20	16	28	10	17
2	15	16	14	4.6	2.6	55	30	20	16	28	11	15
3	14	15	13	4.8	2.9	59	31	19	16	27	10	14
4	14	15	13	4.8	3.2	66	32	21	15	28	9.9	13
5	15	14	12	4.8	3.5	71	32	135	16	27	9.8	13
6	15	15	12	4.9	3.8	80	33	46	15	27	11	12
7	15	15	11	5.0	4.2	86	33	30	15	27	11	12
8	15	15	10	5.0	4.7	94	34	26	14	27	11	11
9	15	15	9.7	4.6	5.4	124	34	23	14	28	14	11
10	15	16	9.0	4.4	6.0	124	33	21	14	28	14	9.9
11	15	16	8.4	4.0	6.8	120	31	20	14	28	11	9.3
12	14	16	7.8	3.7	7.6	88	30	18	14	28	9.9	9.5
13	14	17	7.4	3.5	8.6	58	28	17	14	27	9.3	10
14	14	18	7.0	3.2	9.4	48	27	16	14	27	8.5	10
15	14	18	6.5	2.9	10	42	27	16	14	27	8.7	9.3
16	14	19	6.3	2.7	11	38	27	16	13	27	21	9.7
17	14	19	6.0	2.5	13	35	26	16	13	27	28	11
18	14	18	5.7	2.3	14	35	25	15	79	59	16	106
19	14	18	5.4	2.1	16	35	26	15	29	45	14	152
20	14	18	5.2	1.9	18	34	27	15	23	25	14	69
21	15	17	5.1	1.2	20	33	27	17	21	19	13	44
22	15	16	4.9	.78	22	32	27	20	20	17	11	37
23	15	17	4.8	.48	25	30	27	20	19	16	10	34
24	15	17	4.6	.30	29	28	27	18	19	18	10	35
25	16	17	4.4	.18	33	27	26	17	22	27	9.3	42
26	16	17	4.3	.12	37	26	25	16	28	16	16	47
27	16	18	4.1	.20	41	26	24	16	29	14	17	47
28	16	16	4.0	.37	44	26	23	15	29	14	16	46
29	15	15	4.1	.60	---	27	23	15	29	13	17	43
30	16	14	4.4	1.2	---	29	21	15	28	12	18	41
31	16	---	4.3	2.0	---	29	---	16	---	11	17	---
TOTAL	458	493	232.4	83.73	404.1	1654	845	710	623	772	406.4	939.7
MEAN	14.8	16.4	7.50	2.70	14.4	53.4	28.2	22.9	20.8	24.9	13.1	31.3
MAX	16	19	14	5.0	44	124	34	135	79	59	28	152
MIN	14	14	4.0	.12	2.3	26	21	16	13	11	8.5	9.3
CFSM	.05	.05	.03	.009	.05	.18	.09	.08	.07	.08	.04	.10
IN.	.06	.06	.03	.01	.05	.20	.10	.09	.08	.09	.05	.12
AC-FT	908	978	461	165	802	3280	1680	1410	1240	1530	806	1960

CAL YR 1976 TOTAL 38493.50 MEAN 105 MAX 1980 MIN 4.0 CFSM .35 IN 4.73 AC-FT 76350
VTR YR 1977 TOTAL 7621.33 MEAN 20.9 MAX 152 MIN .12 CFSM .07 IN .94 AC-FT 15120

IOWA RIVER BASIN

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05454000 CEDAR RIVER AT WATERLOO, IA

LOCATION.--Lat. 42°29'44", long 92°20'03", in NW1/4 NW1/4 sec.25, T.89 N., R.13 W., Black Hawk County, Hydrologic Unit 07080205, on left bank at foot of East Seventh Street, 0.3 mi (0.5 km) upstream from Eleventh Avenue Bridge in Waterloo, 1.1 mi (1.8 km) downstream from Black Hawk Creek, and at mile 187.9 (302.3 km) above mouth of Iowa River.

DRAINAGE AREA.--5,145 mi² (13,328 km²).

PERIOD OF RECORD.--October 1940 to current year. Prior to April 1941, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1950.

GAGE.--Water-stage recorder. Datum of gage is 824.14 ft (251.198 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are fair. Slight diurnal fluctuation during low flow caused by powerplant above station. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--37 years. 2,714 ft³/s (76.85 m³/s), 7.16 in/yr (182 mm/yr), 1,966,000 acre-ft/yr (2,420 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,700 ft³/s (2,170 m³/s) Mar. 29, 1961, gage height, 21.86 ft (6.663 m); minimum daily, 152 ft³/s (4.30 m³/s) Jan. 28, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 16, 1929, reached a stage of about 20 ft (6.1 m), determined by Corps of Engineers, from information by City of Waterloo, discharge, 65,000 ft³/s (1,840 m³/s). Flood of Apr. 2, 1933, reached a stage of about 19.5 ft (5.9 m), from information by City of Waterloo, discharge, 61,000 ft³/s (1,730 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,120 ft³/s (88.4 m³/s) Sept. 19, gage height, 6.19 ft (1.887 m), no peak above base of 13,000 ft³/s (368 m³/s); minimum daily, 275 ft³/s (7.79 m³/s) Jan. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	512	876	457	410	295	595	991	831	549	441	484	1010
2	508	608	446	410	300	598	1080	797	578	423	489	948
3	486	564	426	410	300	623	1050	772	554	471	454	859
4	475	544	422	400	315	609	1240	809	503	497	404	788
5	499	549	420	390	315	606	1270	860	459	490	416	746
6	496	536	418	390	315	556	1330	901	469	501	390	726
7	481	521	397	380	310	625	1280	1140	477	588	403	750
8	470	515	395	360	330	697	1170	1130	447	568	412	673
9	473	519	410	350	350	809	1080	1060	450	482	425	666
10	472	525	413	350	375	904	1000	934	460	419	429	694
11	479	514	411	360	390	1190	949	792	472	402	430	548
12	626	457	402	360	400	1580	901	793	417	398	412	623
13	522	459	414	350	405	1690	851	745	427	398	413	669
14	476	446	407	340	440	1710	825	707	509	385	375	594
15	481	515	413	330	460	1670	810	654	500	372	406	585
16	463	463	412	300	460	1580	786	673	465	386	669	537
17	464	330	433	300	480	1410	770	639	499	433	676	567
18	483	511	445	290	480	1250	783	626	507	658	824	1640
19	524	529	445	290	475	1110	809	592	485	611	907	2650
20	514	531	420	290	465	1060	860	596	468	526	836	1620
21	592	525	436	285	465	995	934	613	453	482	705	1330
22	505	505	442	280	480	954	978	648	446	501	674	1200
23	540	436	492	275	570	902	1270	659	435	419	678	1160
24	593	434	452	280	590	838	1320	665	466	400	613	1460
25	590	551	448	300	588	814	1330	610	447	394	599	1910
26	586	823	449	310	605	769	1220	601	458	406	853	1600
27	580	533	460	315	614	762	942	620	457	401	932	1420
28	583	579	530	305	600	825	1020	586	465	460	944	1260
29	578	428	440	300	---	892	926	524	429	629	1080	1210
30	625	460	440	295	---	888	876	544	475	637	1140	1430
31	590	---	430	320	---	937	---	592	---	535	1150	---
TOTAL	16179	15785	13439	10325	12162	30448	30651	22703	14216	14743	19821	31763
MEAN	522	526	424	333	434	982	1022	732	474	476	639	1059
MAX	629	876	530	410	614	1710	1330	1140	578	658	1150	2650
MIN	463	330	395	275	295	595	770	524	417	372	375	537
CFSM	.10	.10	.08	.07	.08	.19	.20	.14	.09	.09	.12	.21
IN.	.12	.11	.10	.07	.09	.22	.22	.16	.10	.11	.14	.23
AC-FT	32090	31310	26660	20480	24120	60390	60800	45030	28200	29240	39310	63000

CAL YR 1976 TOTAL 632932 MEAN 1729 MAX 16000 MIN 330 CFSM .34 IN 4.58 AC-FT 1265000
VTR YR 1977 TOTAL 232236 MEAN 636 MAX 2650 MIN 275 CFSM .12 IN 1.68 AC-FT 460680

IOWA RIVER BASIN

05464020 CEDAR RIVER NEAR GILBERTVILLE, IA

WATER-QUALITY RECORDS

LOCATION.--Lat 42°24'54", long 92°13'00". In SW1/4 SW1/4 sec.23, T.88 N., R.12 W., Black Hawk County, Hydrologic Unit 07080205, at bridge on county highway D38 at Gilbertville, 1.4 mi (2.2 km) upstream from Indian Creek, and at mile 176.5 (284.0 km) above mouth of Iowa River.

DRAINAGE AREA.--5,234 mi² (13,556 km²).

PERIOD OF RECORD.--Water years 1971, 1975 to current year.

REMARKS.--Water discharge estimated on basis of records at gaging station 11.4 mi (18.3 km) upstream at Waterloo. No significant inflow between gaging station and sampling site.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS) (00061)	TOTAL CAL- CIUM (CA) (MG/L) (00916)	TOTAL MAG- NE- SIUM (MG) (MG/L) (00927)	TOTAL SODIUM (NA) (MG/L) (00929)	TOTAL PO- TAS- SIUM (K) (MG/L) (00937)	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	ALKA- LINIT- AS CACO3 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)
OCT											
20...	1130	834	42	20	20	2.3	196	0	161	42	33
NOV											
22...	1200	508	62	21	20	2.4	200	0	200	47	31
DEC											
21...	0920	412	82	26	26	3.1	300	0	246	59	38
JAN											
17...	1145	350	89	25	22	2.9	317	0	260	49	34
FEB											
15...	1130	460	54	19	24	2.7	280	0	213	42	39
MAR											
22...	0945	1030	55	17	19	3.7	226	0	185	44	32
MAY											
04...	0900	800	44	22	21	4.4	170	0	140	55	31
JUN											
01...	1230	550	59	24	27	3.7	210	19	200	49	33
JUL											
05...	1300	490	48	21	26	4.0	200	1	170	47	38
AUG											
05...	1230	416	45	20	26	3.2	190	0	160	42	36
SEP											
07...	1130	750	54	19	21	3.7	200	0	160	41	30

DATE	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL AMMONIA NITRO- GEN (N) (MG/L) (00610)	TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	TOTAL NITRO- GEN (N) (MG/L) (00600)	TOTAL NITRO- GEN (NO3) (N) (MG/L) (71887)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (MG/L) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (MG/L) (70302)
OCT										
20...	1.1	.92	1.7	2.6	3.7	16	.49	295	.40	425
NOV										
22...	2.4	.19	1.4	1.6	4.0	18	.48	335	.46	459
DEC										
21...	3.9	.68	.72	1.4	5.3	23	.79	405	.55	451
JAN										
17...	3.7	1.5	.30	1.8	5.5	24	.76	405	.55	383
FEB										
15...	3.3	1.8	.90	2.7	6.0	27	.77	370	.50	460
MAR										
22...	2.6	1.3	.90	2.2	4.8	21	.62	370	.50	1030
MAY										
04...	.86	1.3	.90	2.2	3.1	14	.45	273	.37	590
JUN										
01...	1.2	.00	1.4	1.4	2.6	12	.59	317	.43	471
JUL										
05...	.82	.29	1.2	1.5	2.3	10	.48	291	.40	385
AUG										
05...	.59	.03	1.7	1.7	2.3	10	.45	232	.32	261
SEP										
07...	.00	.00	1.9	1.9	1.9	8.4	.17	284	.39	575

IONA RIVER BASIN

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05484020 CEDAR RIVER NEAR GILBERTVILLE, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL RESI- DUE (MG/L) (00000)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MMOS) (00000)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (NTU) (00075)	DIS- SOLVED OXYGEN (MG/L) (00300)	PER- CENT SATUR- ATION (0030)	CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340)	CARBON DIOXIDE (CO2) (MG/L) (00405)	FECAL COLI- FORM 7.00N-MF (COL./ 100 ML) (31625)
OCT 20...	307	380	8.0	7.5	8.0	11.8	96	26	.5	700
NOV 22...	348	560	8.3	1.0	4.0	13.8	97	21	1.6	710
DEC 21...	428	700	8.3	.0	3.0	14.1	97	13	2.4	1280
JAN 17...	426	700	8.1	.0	2.0	14.0	96	11	4.0	85620
FEB 18...	383	639	--	.5	2.0	12.0	83	20	--	2650
MAR 22...	389	540	8.4	3.5	5.0	11.8	89	3	1.4	4450
MAY 04...	314	430	8.3	17.5	14	--	--	30	1.4	190
JUN 01...	382	510	8.7	22.0	7.0	--	--	62	.8	--
JUL 05...	314	430	8.7	30.5	6.0	--	--	55	.5	--
AUG 05...	236	490	8.4	26.0	17	--	--	35	1.2	--
SEP 07...	332	500	8.0	23.0	17	--	--	41	.5	19090

IOWA RIVER BASIN

05464130 FOURMILE CREEK NEAR LINCOLN, IA

LOCATION.--Lat 42°13'32", Long 92°36'39", in SW1/4 SW1/4 sec.28, T.86 N., R.15 W., Tama County, Hydrologic Unit 07080205, on left bank 10 ft (3 m) downstream from bridge on county highway, 1.0 mi (1.6 km) upstream from Hair Mile Creek and 4.7 mi (7.6 km) southeast of Lincoln.

DRAINAGE AREA.--13.78 mi² (35.7 km²).

PERIOD OF RECORD.--October 1962 to September 1967, October 1969 to September 1974, June 1976 to current year.

GAGE.--Water-stage recorder and concrete control with V-notch sharp-crested weir. Datum of gage is 931.28 ft (283.848 m) above mean sea level.

REMARKS.--Records good except those for winter period which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--11 years, (1963-67, 1970-74, 75-77), 8.66 ft³/s (10.245 m³/s), 8.53 in/yr (217 mm/yr), 6,270 acre-feet/yr (7.73 km³/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,450 ft³/s (41.1 m³/s) June 22, 1974, gage height, 13.98 ft (4.261 m); no flow Dec. 4 to Feb. 23, July 4, 5, 13, 14, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 83 ft³/s (2.35 m³/s) Sept. 17, gage height 8.59 ft (2.619 m); no peak above base of 350 ft³/s (9.91 m³/s); no flow Dec. 4 to Feb. 23, July 4, 5, 13, 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.06	.11	.01	.00	.00	.18	.32	.05	.01	.01	.31	3.6
2	.06	.08	.01	.00	.00	.35	1.1	.03	.02	.01	.27	1.2
3	.06	.07	.01	.00	.00	.54	.66	.04	.04	.01	.15	.41
4	.10	.06	.00	.00	.00	.70	1.4	.17	.04	.00	.03	.32
5	.12	.06	.00	.00	.00	.85	1.1	.24	.07	.00	.01	.26
6	.07	.09	.00	.00	.00	1.0	.64	.08	.04	.04	.30	.16
7	.07	.06	.00	.00	.00	.78	.53	.05	.04	.17	.13	.10
8	.08	.05	.00	.00	.00	.62	.41	.03	.10	.06	.61	.08
9	.08	.09	.00	.00	.00	.30	.34	.02	.09	.01	.58	.06
10	.08	.07	.00	.00	.00	.18	.28	.02	.02	.01	.31	.03
11	.09	.04	.00	.00	.00	1.5	.20	.02	.02	.01	.12	.02
12	.07	.03	.00	.00	.00	1.8	.17	.01	.03	.01	.04	.02
13	.06	.06	.00	.00	.00	.40	.19	.01	.03	.00	.04	.02
14	.06	.05	.00	.00	.00	.21	.23	.02	.02	.00	.04	.01
15	.05	.06	.00	.00	.00	.23	.21	.02	.01	.05	.11	.01
16	.06	.06	.00	.00	.00	.22	.15	.02	.02	.05	5.9	.01
17	.06	.08	.00	.00	.00	.23	.11	.01	.13	.01	3.5	10
18	.08	.10	.00	.00	.00	.43	.13	.01	.16	.03	1.3	50
19	.12	.10	.00	.00	.00	.15	.67	.01	.02	.01	.38	35
20	.10	.10	.00	.00	.00	.27	.67	.01	.01	.01	.22	6.0
21	.09	.10	.00	.00	.00	.29	.64	.37	.01	.02	.19	1.9
22	.08	.07	.00	.00	.00	.19	.27	.14	.03	.01	.11	1.2
23	.10	.04	.00	.00	.00	.21	.14	.02	.02	.01	.07	1.0
24	.15	.06	.00	.00	.01	.18	.09	.01	.01	.01	.04	2.2
25	.11	.12	.00	.00	.02	.21	.08	.01	.02	.01	.03	1.7
26	.09	.11	.00	.00	.03	.25	.07	.01	.01	.01	1.3	1.2
27	.08	.04	.00	.00	.05	.47	.04	.01	.01	.01	1.1	.88
28	.07	.04	.00	.00	.08	.66	.10	.02	.01	1.1	2.4	.65
29	.09	.01	.00	.00	---	1.1	.05	.03	.01	.28	2.9	.84
30	.16	.01	.00	.00	---	.48	.05	.02	.01	.02	.68	1.2
31	.13	---	.00	.00	---	.30	.02	.02	---	.01	.46	---
TOTAL	2.68	2.02	.03	.00	.19	15.28	11.04	1.53	1.06	1.99	24.43	119.78
MEAN	.086	.067	.001	.000	.007	.49	.37	.049	.035	.064	.79	3.99
MAX	.16	.12	.01	.00	.08	1.8	1.4	.37	.16	1.1	5.9	60
CFSM	.006	.005	.000	.000	.001	.04	.03	.004	.003	.005	.03	.01
IN.	.01	.01	.00	.00	.00	.04	.03	.00	.00	.01	.07	.32
AC-FT	5.3	4.0	.05	.00	.4	30	22	3.0	2.1	3.9	48	238

WTR YR 1977 TOTAL 180.03 MEAN .49 MAX 50 MIN .00 CFSM .04 IN .49 AC-FT 387

IOWA RIVER BASIN

95

08464133 HALF MILE CREEK NEAR GLADSBROOK, IA

LOCATION.--Lat 42°12'40", long 92°35'39", in SW1/4, SW1/4 sec.33, T.86 N., R.15 W., Tama County, Hydrologic Unit 07080205, on right bank 10 ft (3 m) downstream from bridge on county highway, 0.8 mi (1.3 km) upstream from mouth, and 5.3 mi (8.5 km) northeast of Gladbrook.

DRAINAGE AREA.--1.33 mi² (3.44 km²).

PERIOD OF RECORD.--October 1962 to September 1967, October 1969 to September 1974, June 1976 to current year.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 949.16 ft (289.999 m) above mean sea level.

REMARKS.--Records fair except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--11 years (1963-67, 1970-74, 76-77) 0.76 ft³/s (0.022 m³/s), 7.76 in/yr (197 mm/yr), 551 acre-feet/yr (0.679 hm³/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 307 ft³/s (8.69 m³/s) July 9, 1965, gage height, 9.24 ft (2.816 m); no flow several days in 1964-67, 1971-72, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 90 ft³/s (2.55 m³/s) and maximum ("):

Discharge				Gage Height				Discharge				Gage Height					
Date	Time	(ft ³ /s)	(m ³ /s)	(ft)	(m)	Date	Time	(ft ³ /s)	(m ³ /s)	(ft)	(m)	Date	Time	(ft ³ /s)	(m ³ /s)	(ft)	(m)
Aug. 15	2310	114	3.23	6.72	2.048	Sept. 17	1020	151	4.28	7.52	2.292						

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.01	.00	.00	.00	.01	.04	.01	.00	.00	.03	3.2
2	.00	.01	.00	.00	.00	.02	.12	.01	.00	.00	.03	.17
3	.00	.00	.00	.00	.00	.03	.06	.01	.00	.00	.05	.10
4	.00	.00	.00	.00	.00	.05	.19	.05	.00	.00	.01	.09
5	.00	.00	.00	.00	.00	.04	.12	.05	.00	.00	.09	.05
6	.00	.00	.00	.00	.00	.03	.05	.02	.00	.33	.01	.03
7	.00	.00	.00	.00	.00	.03	.04	.02	.00	.29	.01	.02
8	.00	.01	.00	.00	.00	.03	.04	.01	.00	.00	1.4	.02
9	.00	.01	.00	.00	.00	.03	.03	.00	.00	.00	.20	.01
10	.00	.00	.00	.00	.00	.03	.02	.00	.00	.00	.01	.06
11	.00	.00	.00	.00	.00	.19	.01	.00	.00	.00	.01	.00
12	.00	.00	.00	.00	.00	.92	.01	.00	.00	.00	.01	.01
13	.00	.00	.00	.00	.00	.10	.01	.00	.00	.00	.01	.00
14	.00	.00	.00	.00	.00	.03	.02	.00	.00	.00	3.9	.00
15	.00	.00	.00	.00	.00	.02	.02	.00	.00	.00	1.4	.00
16	.00	.00	.00	.00	.00	.02	.01	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.03	.01	.00	.09	.00	.00	18
18	.00	.00	.00	.00	.00	.04	.01	.00	.01	.00	.00	2.0
19	.00	.00	.00	.00	.00	.02	.01	.00	.00	.00	.00	1.0
20	.00	.00	.00	.00	.00	.02	.03	.00	.00	.00	.00	.75
21	.00	.00	.00	.00	.00	.02	.08	.01	.00	.00	.00	.50
22	.00	.00	.00	.00	.00	.02	.03	.05	.00	.00	.00	.27
23	.00	.00	.00	.00	.00	.02	.02	.01	.00	.00	.00	.58
24	.00	.00	.00	.00	.01	.01	.01	.01	.00	.00	.00	1.0
25	.00	.00	.00	.00	.01	.02	.01	.01	.00	.00	.00	.49
26	.00	.01	.00	.00	.01	.02	.01	.00	.00	.00	.02	.33
27	.00	.01	.00	.00	.01	.05	.01	.00	.00	.00	.00	.26
28	.00	.00	.00	.00	.01	.08	.02	.00	.00	.11	.42	.21
29	.00	.00	.00	.00	---	.14	.01	.00	.00	.04	.05	.19
30	.01	.00	.00	.00	---	.05	.01	.00	.00	.00	.01	.97
31	.01	---	.00	.00	---	.02	---	.00	---	.00	2.1	---
TOTAL	.02	.05	.00	.00	.05	2.14	1.06	.27	.10	.77	9.73	30.36
MEAN	.001	.002	.000	.000	.002	.069	.035	.009	.003	.025	.31	1.01
MAX	.01	.01	.00	.00	.01	.92	.19	.05	.09	.33	3.9	18
MIN	.00	.00	.00	.00	.00	.01	.01	.00	.00	.00	.00	.00
CFSM	.001	.002	.000	.000	.002	.05	.03	.007	.002	.02	.23	.76
IN.	.00	.00	.00	.00	.00	.06	.03	.01	.00	.02	.27	.85
AC-FT	.04	.1	.00	.00	.10	4.2	2.1	.5	.2	1.5	19	60

WTR YR 1977 TOTAL 44.55 MEAN .12 MAX 18 MIN .00 CFSM .09 IN 1.25 AC-FT 89

IOWA RIVER BASIN

05464137 FOURMILE CREEK NEAR TRAER, IA

LOCATION.--Lat 42°12'07", long 92°33'44", NW1/4 SE1/4 sec.2, T.85 N., R.15 W., Tama County, Hydrologic Unit 07080205, on left bank 10 ft (3 m) downstream from bridge on county highway T69, 2.0 mi (3.2 km) upstream from mouth, and 5.0 mi (8.0 km) northwest of Traer.

DRAINAGE AREA.--19.51 mi² (50.53 km²).

PERIOD OF RECORD.--July 1962 to September 1974, October 1975 to current year.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 905.87 ft (276.109 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--14 years (water years 1963-74, 76-77), 11.0 ft³/s (0.312 m³/s), 7.66 in/yr (195 mm/yr), 7,970 acre-ft/yr (9.872 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,040 ft³/s (29.5 m³/s) June 22, 1974, gage height, 12.91 ft (3.935 m); maximum gage height, 13.41 ft (4.097 m) Feb. 19, 1971, backwater from ice; no flow for many days in 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 104 ft³/s (2.95 m³/s) Sept. 17, gage height, 8.63 ft (2.631 m), no peak above base of 400 ft³/s (11.3 m³/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.22	.22	.02	.00	.00	.22	1.3	.12	.04	.00	.03	7.6
2	.05	.24	.01	.00	.00	.40	1.8	.18	.02	.00	.69	2.6
3	.07	.29	.01	.00	.00	.70	1.3	.13	.01	.00	.49	1.6
4	.13	.18	.01	.00	.00	1.1	2.2	.32	.00	.00	.11	1.0
5	.31	.17	.00	.00	.00	1.7	1.5	.58	.00	.00	.15	.01
6	.09	.22	.00	.00	.00	1.9	1.1	.31	.00	.00	1.2	.73
7	.32	.21	.00	.00	.00	1.4	.88	.24	.00	1.0	.35	.53
8	.06	.20	.00	.00	.00	1.2	.93	.14	.00	.19	1.5	.41
9	.12	.27	.00	.00	.00	.97	.80	.11	.01	.06	1.5	.38
10	.11	.23	.00	.00	.00	1.3	.70	.07	.00	.00	1.3	.26
11	.35	.17	.00	.00	.00	2.3	.58	.08	.00	.00	.35	.22
12	.08	.10	.00	.00	.00	2.8	.85	.07	.00	.00	.18	.24
13	.11	.13	.00	.00	.00	.50	1.5	.07	.00	.00	.10	.23
14	.16	.13	.00	.00	.00	.31	.65	.05	.00	.00	.08	.18
15	.25	.18	.00	.00	.00	.48	.65	.07	.00	.00	.20	.16
16	.12	.22	.00	.00	.00	.45	.45	.11	.00	.14	7.6	.16
17	.14	.27	.00	.00	.00	.49	.38	.05	.05	.13	6.8	7.9
18	.22	.32	.00	.00	.00	.68	.35	.08	.44	.09	3.0	37
19	.21	.32	.00	.00	.00	.36	.36	.07	.12	.12	1.3	18
20	.19	.33	.00	.00	.00	.45	1.2	.06	.02	.02	.63	7.4
21	.22	.30	.00	.00	.00	.48	1.1	.27	.00	.00	.37	4.6
22	.17	.28	.00	.00	.00	.44	.59	.85	.00	.00	.24	3.2
23	.24	.17	.00	.00	.00	.42	.38	.25	.04	.00	.18	3.0
24	.29	.21	.00	.00	.01	.40	.29	.10	.00	.00	.15	5.6
25	.25	.39	.00	.00	.02	.50	.22	.06	.06	.00	.11	4.4
26	.20	.36	.00	.00	.03	.70	.20	.05	.01	.00	.33	2.3
27	.18	.09	.00	.00	.06	1.1	.16	.04	.00	.00	1.1	2.6
28	.24	.05	.00	.00	.11	1.6	.22	.05	.00	.50	2.5	2.1
29	.18	.03	.00	.00	---	1.9	.21	.05	.00	4.7	2.2	1.9
30	.26	.02	.00	.00	---	.96	.17	.12	.00	.73	1.7	3.5
31	.29	---	.00	.00	---	.60	---	.12	---	.09	.97	---
TOTAL	5.83	8.30	.05	.00	.23	28.61	23.02	4.88	.94	7.77	37.31	118.61
MEAN	.19	.21	.002	.000	.008	.92	.77	.15	.031	.25	1.20	3.95
MAX	.35	.39	.02	.00	.11	2.6	2.2	.85	.44	4.7	7.6	37
MIN	.05	.02	.00	.00	.00	.22	.16	.04	.00	.00	.03	.16
CFSM	.01	.01	.000	.000	.000	.05	.04	.008	.002	.01	.06	.20
IN-	.01	.01	.00	.00	.00	.05	.04	.01	.00	.01	.07	.23
AC-FT	12	12	.10	.00	.6	57	46	9.7	1.9	15	74	225

CAL YR 1976 TOTAL 2183.57 MEAN 5.97 MAX 111 MIN .00 CFSM .31 IN 4.16 AC-FT 4330
WTR YR 1977 TOTAL 233.58 MEAN .64 MAX 37 MIN .00 CFSM .03 IN .45 AC-FT 463

IOWA RIVER BASIN

97

05464480 CEDAR RIVER NEAR PALO, IA

WATER-QUALITY RECORDS

LOCATION.--Lat 42°03'09", long 91°45'18", in NE1/4 NE1/4 sec.33, T.84 N., R.8 W., Linn County, Hydrologic Unit 07080205, at bridge on county highway E38, 1.2 mi (1.9 km) upstream from Otter Creek, 1.5 mi (2.4 km) southeast of Palo, 2.4 mi (3.9 km) downstream from Bear Creek, and at mile 124.2 (199.6 km) above mouth of Iowa River.

DRAINAGE AREA.--6,390 mi² (16,524 km²).

PERIOD OF RECORD.--Water years 1975 to current year.

REMARKS.--Water discharge estimated on basis of records at gaging station 11.5 mi (18.5 km) downstream at Cedar Rapids. No significant inflow between gaging station and sampling site.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS) (00081)	TOTAL CAL- CIUM (CA) (MG/L) (00916)	TOTAL MAG- NE- SIUM (MG) (MG/L) (00927)	TOTAL SODIUM (NA) (MG/L) (00929)	TOTAL PO- TAS- SIUM (K) (MG/L) (00937)	BICAR- BORATE (CO3) (MG/L) (00440)	CAR- BORATE (CO3) (MG/L) (00445)	ALKA- LINIT AS CACO3 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)
OCT											
20...	0945	568	43	19	18	2.2	169	0	139	54	29
NOV											
22...	1020	522	64	22	21	2.6	246	0	202	48	30
DEC											
20...	1300	478	77	25	24	2.5	288	0	236	58	41
JAN											
17...	1015	325	90	26	24	3.3	321	0	263	81	39
FEB											
15...	1000	406	65	19	33	3.0	248	0	203	55	57
MAR											
21...	1300	1599	51	19	18	3.6	213	0	175	40	31
MAY											
04...	1300	980	45	22	19	4.3	160	0	130	85	27
31...	1200	696	35	21	22	3.7	150	1	120	51	29
AUG											
04...	1430	550	44	19	21	3.1	190	0	150	47	32
SEP											
06...	1230	1130	53	19	16	3.2	180	0	160	45	25

DATE	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL AMMONIA NITRO- GEN (N) (MG/L) (00610)	TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	TOTAL NITRO- GEN (N) (MG/L) (00600)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)	TOTAL PHOS- PHORUS (P) (MG/L) (00685)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (TONS PER AC-FY) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)
OCT										
20...	.29	.71	1.9	2.6	2.9	13	.42	295	.46	452
NOV										
22...	2.0	.30	1.5	1.8	3.8	17	.46	344	.47	578
DEC										
20...	2.9	.69	.91	1.6	4.5	20	.55	421	.57	543
JAN										
17...	3.6	.00	2.7	2.7	6.3	28	.71	437	.59	385
FEB										
15...	2.9	1.7	.80	2.5	5.4	24	.65	405	.55	444
MAR										
21...	1.8	.94	1.3	2.2	4.0	18	.47	344	.47	1480
MAY										
04...	.03	1.0	1.5	2.6	2.6	12	.42	245	.33	648
31...	.03	.34	1.6	1.9	1.9	8.5	.36	254	.35	477
AUG										
04...	.01	.01	1.6	1.6	1.6	7.1	.39	263	.36	391
SEP										
06...	.77	.39	1.1	1.5	2.3	10	.22	264	.36	805

IOWA RIVER BASIN
08484180 CEDAR RIVER NEAR PALO, IA--Continued
WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL RESI- DUE (MG/L) (00000)	SPE- CIFIC CON- DUCTY- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	DIS- SOLVED OXYGEN (MG/L) (00300)	PER- CENT SATUR- ATION (00301)	CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340)	CARBON DIOXIDE (CO2) (MG/L) (00405)	FECAL COLI- FORM .7UM-HF (COL./ 100 ML) (21625)
OCT										
20...	318	440	8.3	8.6	5.0	11.8	94	15	1.4	950
NOV										
22...	374	840	8.1	2.0	5.0	12.7	92	84	3.1	110
DEC										
20...	401	620	8.6	.0	3.0	14.0	96	12	1.2	330
JAN										
17...	439	840	8.1	.0	2.0	13.7	94	12	4.1	2600
FEB										
18...	421	700	--	.0	3.0	9.6	66	26	--	280
MAR										
21...	368	500	8.0	4.5	8.0	11.2	86	30	3.4	970
MAY										
04...	324	478	9.1	17.0	26	--	--	39	.2	--
31...	309	380	9.1	23.0	14	--	--	70	.2	--
JUN										
04...	321	500	8.8	26.5	18	--	--	49	.5	--
SEP										
08...	339	470	8.7	23.0	24	--	--	54	.6	170

IOWA RIVER BASIN

99

05464800 CEDAR RIVER AT CEDAR RAPIDS, IA

LOCATION.--Lat 41°59'16", Long 91°40'01". In SE1/4 NW1/4 sec.28, T.83 N., R.7 W., Linn County, Hydrologic Unit 07080205, on right bank 400 ft (122 m) upstream from bridge on Eighth Avenue in Cedar Rapids, 2.7 mi (4.3 km) upstream from Prairie Creek, and at mile 112.7 (181.3 km) upstream from mouth of Iowa River.

DRAINAGE AREA.--6,510 mi² (16,861 km²).

PERIOD OF RECORD.--October 1902 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 988: 1924. WSP 1308: 1904, 1905-13, 1915, 1917, 1919-24, 1928, 1930. WSP 1438: Drainage area. WSP 1558: 1915-18 (M), 1920 (M), 1922 (M), 1929, 1933, 1943.

GAGE.--Water-stage recorder. Datum of gage is 700.47 ft (213.503 m) above mean sea level. Prior to Aug. 20, 1920, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--75 years, 3,262 ft³/s (91.50 m³/s), 6.74 in/yr (171 mm/yr), 2,341,000 acre-ft/yr (2,886 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 73,000 ft³/s (2,070 m³/s) Mar. 31, 1961, gage height, 19.56 ft (5.992 m); maximum gage height, 20.0 ft (6.10 m) Mar. 18, 1929; minimum discharge, 53 ft³/s (1.50 m³/s) Jan. 6, 1950, caused by construction operations upstream; minimum daily, 212 ft³/s (6.00 m³/s) Dec. 10, 1949.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1881 reached a stage of about 20 ft (6 m), discharge, 85,000 ft³/s (2,410 m³/s), estimated.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,500 ft³/s (413 m³/s) Sept. 18, gage height, 7.06 ft (2.152 m) at 2139 hours, no other peak above base of 12,000 ft³/s (340 m³/s); minimum daily, 283 ft³/s (8.01 m³/s) Feb. 3, 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	571	571	485	423	284	710	1200	1150	540	519	613	1650
2	579	580	510	410	284	690	1270	1090	670	509	595	1590
3	565	777	534	396	283	752	1320	1020	659	517	559	1440
4	565	599	510	384	283	776	1400	1050	652	513	550	1360
5	605	650	494	371	284	800	1450	1130	645	541	595	1250
6	592	639	486	360	285	800	1590	1180	611	530	504	1130
7	582	615	486	350	290	848	1580	1190	565	537	730	1050
8	577	593	478	340	295	986	1610	1250	562	558	7790	1000
9	573	600	455	331	302	1300	1550	1330	564	599	4480	1000
10	554	592	470	326	311	1160	1430	1320	560	585	1770	916
11	548	586	470	318	321	1180	1320	1260	551	566	1180	888
12	545	533	463	313	334	1350	1230	1140	559	514	930	848
13	548	487	456	310	352	1650	1180	996	543	469	788	800
14	599	468	463	306	380	1750	1150	960	519	449	720	812
15	611	574	449	303	407	1840	1100	912	500	437	848	848
16	541	632	455	300	400	1860	1060	880	510	432	2960	812
17	542	704	470	298	414	1750	1030	834	535	438	1360	988
18	529	525	486	296	421	1790	1010	821	564	516	1160	9250
19	564	517	485	294	421	1590	1060	794	579	716	1230	12900
20	568	570	486	293	445	1440	1040	854	582	669	1210	8210
21	589	618	504	292	463	1340	1190	924	537	752	1250	5170
22	574	609	502	291	502	1250	1200	796	519	640	1160	3730
23	575	478	499	290	550	1170	1200	774	535	586	1020	3100
24	594	486	494	289	570	1120	1230	782	507	1030	930	3460
25	614	730	489	288	680	1080	1410	778	499	800	888	5620
26	634	621	482	287	720	1030	1490	777	504	568	944	4480
27	633	595	475	285	700	1140	1490	742	504	502	930	3760
28	634	428	465	285	690	1180	1400	774	485	486	1210	3190
29	635	330	456	289	---	1380	1230	765	478	478	1840	2750
30	664	449	445	285	---	1350	1220	774	560	510	1670	2630
31	662	---	434	284	---	1210	---	696	---	577	1530	---
TOTAL	18186	17537	14940	9885	11777	39302	36640	29778	16652	17751	44164	86532
MEAN	587	565	479	319	421	1236	1282	951	556	573	1425	2664
MAX	664	777	534	423	720	1860	1610	1330	670	1030	7790	12900
MIN	539	330	434	284	283	690	1010	696	475	432	550	800
CFSM	.09	.09	.07	.05	.07	.19	.20	.15	.09	.09	.22	.44
IN.	.10	.10	.08	.05	.07	.22	.22	.17	.10	.10	.25	.49
AC-FT	36070	34780	29440	19510	23360	75970	76640	59060	33110	35210	87600	171600

CAL YR 1976 TOTAL 761881 MEAN 2082 MAX 15600 MIN 330 CFSM .32 IN 4.35 AC-FT 1511000
WTR YR 1977 TOTAL 344054 MEAN 943 MAX 12900 MIN 283 CFSM .15 IN 1.97 AC-FT 582500

IOWA RIVER BASIN

05484640 PRAIRIE CREEK AT FAIRFAX, IA

LOCATION.--Lat 41°55'22", long 91°47'02", in SE1/4 SW1/4 sec.9, T.82 N., R.8 W., Linn County, Hydrologic Unit 07080205, on right bank 12 ft (4 m) upstream from bridge on State Highway 149 at west side of Fairfax, and 10.7 mi (17.2 km) upstream from mouth.

DRAINAGE AREA.--178 mi² (461 km²).

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 737.00 ft (224.038 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--11 years, 127 ft³/s (3.597 m³/s), 9.59 in/yr (246 mm/yr), 92,010 acre-ft/yr (113 hm³/yr); median of yearly mean discharges, 110 ft³/s (3.12 m³/s), 8.4 in/yr (213 mm/yr), 79,700 ac-ft/yr (99.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,160 ft³/s (174 m³/s) May 16, 1974, gage height, 13.66 ft (4.164 m); no flow July 10-18, 30, Aug. 1, 3, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--An outstanding flood occurred in June 1944, stage and discharge unknown.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,220 ft³/s (62.9 m³/s) Aug. 17, gage height, 8.89 ft (2.746 m) at 0200 hours, no other peak above base of 1,200 ft³/s (34.0 m³/s); no flow July 10-18, 30, Aug. 1, 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.1	7.6	2.2	.49	.11	149	12	6.8	2.7	4.4	.00	91
2	5.2	6.2	2.1	.46	.11	134	12	6.2	2.7	3.3	.17	73
3	6.0	5.3	2.1	.43	.11	147	11	5.9	2.3	2.1	.00	61
4	6.0	5.3	2.0	.41	.11	149	11	7.1	2.9	1.9	.17	54
5	6.0	5.1	1.8	.39	.11	122	12	11	2.5	1.9	2.3	49
6	6.0	5.0	1.8	.37	.12	92	12	8.6	2.5	1.0	1.9	43
7	5.3	5.0	1.7	.35	.13	80	11	7.4	2.3	.85	2.5	38
8	4.4	4.8	1.6	.35	.14	61	10	5.5	3.1	.51	.81	35
9	4.0	4.8	1.6	.34	.17	38	9.3	4.6	2.5	.17	278	32
10	4.2	4.6	1.6	.32	.20	22	8.9	3.9	2.3	.00	164	29
11	3.8	4.4	1.7	.31	.30	19	8.3	3.7	3.1	.00	45	26
12	4.0	4.2	1.6	.30	.35	34	7.7	3.5	2.7	.00	23	26
13	4.0	4.2	1.6	.28	1.0	29	7.7	3.1	2.3	.00	16	26
14	4.6	4.2	1.7	.26	1.7	18	7.7	3.5	2.1	.00	12	25
15	4.0	4.5	1.5	.23	2.8	15	8.3	4.6	1.9	.00	31	23
16	3.8	4.8	1.5	.19	5.0	13	8.3	5.0	1.9	.34	1860	23
17	3.3	5.0	1.5	.16	15	12	8.0	4.4	1.9	.51	1170	26
18	4.6	5.2	1.7	.14	25	15	7.1	4.1	2.1	1.4	291	877
19	5.5	5.5	1.6	.12	50	15	7.4	3.7	1.5	1.2	198	529
20	5.5	5.3	1.8	.11	110	12	8.9	4.6	1.4	1.9	151	291
21	5.3	5.1	1.9	.11	221	13	13	5.5	1.7	1.4	130	189
22	5.1	4.9	1.9	.11	228	15	12	5.2	1.5	.85	104	142
23	5.5	4.6	1.9	.11	288	12	10	5.0	1.2	.17	83	119
24	5.5	4.0	1.8	.11	346	11	8.9	4.1	1.2	2.5	73	140
25	5.5	4.8	1.7	.11	301	5.7	8.6	3.7	1.0	1.2	70	196
26	5.1	5.6	1.7	.11	228	9.3	7.7	3.5	1.7	.69	70	139
27	5.1	5.0	1.6	.11	189	12	7.4	2.9	.85	.34	65	104
28	4.8	2.9	1.8	.11	167	16	6.8	2.9	.51	.85	165	83
29	5.1	2.4	1.3	.11	---	22	6.5	2.7	.51	.34	309	78
30	5.8	2.7	.70	.11	---	19	6.5	3.5	3.3	.00	157	78
31	6.9	---	.54	.11	---	14	---	3.1	---	.17	116	---
TOTAL	185.0	143.4	51.54	7.23	2180.55	1319.0	276.0	149.0	51.17	29.98	5587.04	3744
MEAN	5.00	4.78	1.66	.23	77.9	42.5	9.20	4.81	2.04	.97	188	125
MAX	5.9	7.6	2.2	.49	346	149	13	11	3.3	4.4	1860	877
MIN	3.3	2.2	.54	.11	.11	9.3	6.5	2.7	.51	.00	.00	23
CFSM	.03	.03	.009	.001	.44	.24	.05	.03	.01	.005	1.01	.70
IN.	.03	.03	.01	.00	.45	.28	.06	.03	.01	.01	1.17	.78
AC-FT	307	294	102	14	4330	2620	547	296	121	59	11090	7430

CAL YR 1976 TOTAL 29713.64 MEAN 81.2 MAX 1720 MIN .84 CFSM .46 IN 6.21 AC-FT 58940
 VTR YR 1977 TOTAL 13704.02 MEAN 37.5 MAX 1860 MIN .00 CFSM .21 IN 2.85 AC-FT 27180

IOWA RIVER BASIN

101

05464760 CEDAR RIVER NEAR BERTRAM, IA

WATER-QUALITY RECORDS

LOCATION.--Lat 41°56'02", long 91°32'54", in SE1/4 NW1/4 sec.9, T.82 N., R.6 W., Linn County, Hydrologic Unit 07080206, at bridge on U.S. Highway 30, 0.2 mi (0.3 km) downstream from Big Creek, 1.7 mi (2.7 km) southwest of Bertram, and at mile 103.1 (165.9 km) above mouth of Iowa River.

DRAINAGE AREA.--6,955 mi² (18,013 km²).

PERIOD OF RECORD.--Water years 1975 to current year.

REMARKS.--Water discharge estimated on basis of records at gaging station 9.6 mi (15.4 km) upstream at Cedar Rapids. No significant inflow between gaging station and sampling site.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TOTAL CAL- CIUM (CA) (MG/L) (00918)	TOTAL MAG- NE- SIUM (MG) (MG/L) (00927)	TOTAL SODIUM (NA) (MG/L) (00929)	TOTAL PO- TAS- SIUM (K) (MG/L) (00937)	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	ALKA- LINITY AS CACOS (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)
OCT											
20...	0835	568	46	20	28	4.4	201	0	165	51	51
NOV											
22...	0900	622	66	23	31	5.2	245	0	201	52	53
DEC											
20...	1415	478	82	26	44	3.8	315	0	259	51	65
JAN											
17...	0845	326	93	26	46	5.0	360	0	295	57	87
FEB											
15...	0820	406	73	21	43	4.2	298	0	244	50	82
MAR											
21...	1110	1590	54	17	24	4.4	220	0	180	44	41
MAY											
04...	1600	980	34	21	27	4.9	120	0	98	57	41
31...	1045	696	36	20	24	3.8	140	19	150	54	29
AUG											
04...	1230	550	45	20	28	3.6	190	0	160	45	39
SEP											
06...	0930	1130	54	18	20	3.7	180	0	150	46	32

DATE	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL AMMONIA NITRO- GEN (N) (MG/L) (00610)	TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	TOTAL NITRO- GEN (N) (MG/L) (00600)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)
OCT										
20...	.41	3.9	7.1	11	11	51	.53	339	.46	520
NOV										
22...	1.2	3.6	5.4	10	11	50	.63	388	.53	652
DEC										
20...	2.3	5.2	4.8	10	12	54	.94	439	.60	567
JAN										
17...	2.2	11	8.0	19	21	94	1.2	532	.72	468
FEB										
15...	1.7	11	1.0	12	14	61	1.2	467	.64	512
MAR										
21...	1.6	3.9	2.0	5.9	7.5	33	.62	365	.50	1570
MAY										
04...	1.6	2.4	1.6	4.0	5.6	25	.89	267	.35	705
31...	.58	.01	1.6	1.6	2.2	9.7	.46	264	.35	496
AUG										
04...	.18	1.4	1.2	2.6	2.8	12	.66	282	.38	419
SEP										
06...	2.1	.01	1.3	1.3	3.4	15	.34	289	.39	882

IOWA RIVER BASIN
05484780 CEDAR RIVER NEAR BERTRAM, IA--Continued
WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL RESI- DUE (MG/L) (00500)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (NTU) (00075)	DIS- SOLVED OXYGEN (MG/L) (00300)	PER- CENT SATUR- ATION (00301)	CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340)	CARBON DIOXIDE (CO2) (MG/L) (00405)	FECAL COLI- FORM .7UM-RF (COL./ 100 ML) (31625)
OCT										
20...	376	589	8.4	8.0	4.0	10.0	84	23	1.3	110000
NOV										
22...	441	940	8.2	3.0	7.0	12.6	93	36	2.5	36000
DEC										
20...	805	850	8.4	2.0	5.0	12.8	93	29	2.0	4000
JAN										
17...	536	940	7.9	.0	3.0	13.8	95	15	7.3	32000
FEB										
15...	493	800	--	2.0	5.0	5.9	43	32	--	120000
MAR										
21...	376	510	7.8	5.5	6.0	12.0	95	9	5.6	8000
MAY										
04...	325	480	8.4	17.5	19	--	--	44	.5	72000
31...	323	420	8.6	24.5	24	--	--	50	.7	--
AUG										
04...	387	500	8.2	27.0	14	5.0	61	29	1.9	--
SEP										
06...	357	500	8.3	23.0	23	8.1	95	46	1.4	14000

08485000 CEDAR RIVER NEAR CONESVILLE, IA

LOCATION.--Lat 41°24'36", long 91°17'06", in SW1/4 SW1/4 sec.2, T.76 N., R.4 W., Muscatine County, Hydrologic Unit 07080208, on right bank 10 ft (3 m) downstream from bridge on county highway 628, 3.4 mi (5.5 km) northeast of Conesville, 5.2 mi (8.4 km) downstream from Wapsinoc Creek, 10.7 mi (17.2 km) upstream from mouth, and at mile 39.8 (64.0 km) upstream from mouth of Iowa River.

DRAINAGE AREA.--7,785 mi² (20,183 km²).

PERIOD OF RECORD.--September 1939 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1708: 1955.

GAGE.--Water-stage recorder. Datum of gage is 581.95 ft (177.378 m) above mean sea level. Prior to Feb. 2, 1940, and Apr. 11, 1952, to July 1, 1954, nonrecording gage, Feb. 2, 1940, to Apr. 10, 1952, and July 2, 1954, to Sept. 16, 1963, water-stage recorder, at site 150 ft (46 m) downstream on left bank at same datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

COOPERATION.--Nine discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--38 years, 4,333 ft³/s (122.7 m³/s), 7.56 in/yr (192 mm/yr), 3,139,000 acre-ft/yr (3,070 hm³/yr); median of yearly mean discharges, 3,850 ft³/s (109 m³/s), 6.7 in/yr (170 mm/yr), 2,789,000 acre-ft/yr (3,440 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 70,800 ft³/s (2,010 m³/s) Apr. 2, 1951, gage height, 16.62 ft (5.086 m); maximum gage height, 16.85 ft (5.136 m) Apr. 12, 1965; minimum daily discharge, 280 ft³/s (7.08 m³/s) Nov. 28, 1955, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1929 reached a stage of 15.8 ft (4.82 m), from information by local residents to Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 12,000 ft³/s (340 m³/s) and maximum (°):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)
Aug. 9	1330	12,900 365	11.26 3.432	Sept. 20	1430	*17,200 487	*12.47 3.801
Aug. 17	1000	12,700 360	11.22 3.420				

Minimum daily discharge, 320 ft³/s (9.06 m³/s) Jan. 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	685	779	840	490	350	740	1750	1450	859	5850	820	2220
2	695	779	840	450	350	760	1610	1450	823	2560	819	2140
3	695	774	850	450	350	920	1600	1410	783	1250	820	2090
4	690	774	700	440	360	990	1630	1380	781	984	825	2030
5	752	802	660	430	360	1030	1700	1390	787	888	828	1940
6	808	825	860	420	370	1050	1810	1460	787	831	832	1840
7	808	790	860	410	370	1130	1820	1500	773	796	1150	1740
8	752	768	850	390	370	1150	1860	1410	767	783	2620	1660
9	725	745	860	380	360	1160	1840	1350	740	769	12000	1890
10	720	735	860	370	360	1200	1810	1390	730	748	8850	1570
11	710	730	860	350	380	1230	1760	1380	792	742	4590	1640
12	695	725	870	340	410	1630	1700	1390	991	747	3180	1490
13	690	720	880	330	450	1810	1630	1350	840	746	2410	1480
14	695	695	880	330	460	1840	1580	1240	747	721	2190	1460
15	690	690	870	320	450	1920	1520	1170	719	678	1940	1400
16	715	855	860	330	470	2000	1490	1120	698	673	4660	1380
17	752	862	850	330	480	2010	1440	1130	688	674	11600	1370
18	705	725	850	330	500	2000	1370	1120	744	679	6240	3880
19	690	762	860	340	520	2000	1350	1050	742	973	3870	13800
20	705	768	850	330	560	1970	1310	1020	714	1030	2850	16800
21	720	735	800	330	600	1890	1430	1090	702	959	2560	12900
22	715	696	470	330	640	1700	1590	1210	703	1020	2340	7860
23	715	701	830	330	660	1650	1610	1230	678	980	2160	5900
24	720	736	860	340	720	1600	1540	1260	677	899	1990	5310
25	720	797	860	350	760	1490	1550	1260	688	2220	1810	5350
26	720	820	860	340	700	1400	1560	1270	694	2630	1760	6200
27	725	700	870	340	750	1360	1610	1210	688	1490	1720	6040
28	740	600	860	340	760	1440	1670	1040	652	1080	1660	5130
29	746	440	840	340	---	1790	1630	923	644	930	1740	4520
30	762	640	810	350	---	2090	1490	904	1430	859	1980	4110
31	774	---	800	350	---	1970	---	850	---	836	2340	---
TOTAL	22414	21781	17880	11310	13900	46930	48260	38407	23041	37125	95153	126740
MEAN	723	726	577	365	496	1514	1609	1239	768	1198	3069	4225
MAX	808	825	700	490	760	2090	1860	1500	1430	5850	12000	16800
MIN	685	440	470	320	360	740	1310	850	644	673	818	1370
CFSM	.09	.09	.07	.05	.06	.19	.21	.16	.10	.15	.39	.54
IN-	.11	.10	.09	.07	.07	.22	.18	.11	.11	.18	.45	.61
AC-FT	44460	43200	35460	22430	27570	93090	95720	76180	45700	73640	188700	251400

CAL YR 1976	TOTAL	950331	MEAN	2597	MAX	20500	MIN	440	CFSM	.33	IN	4.54	AC-FT	1885000
WTR YR 1977	TOTAL	502941	MEAN	1378	MAX	16800	MIN	320	CFSM	.18	IN	2.40	AC-FT	997600

IOWA RIVER BASIN

05489806 IOWA RIVER AT WAPELLO, IA

LOCATION.--Lat 41°10'48", long 91°10'57", in NW1/4 SE1/4 sec.27, T.74 N., R.3 W., Louisa County, Hydrologic Unit 07080209, on right bank 30 ft (9 m) downstream from bridge on State Highway 99 at east edge of Wapello, 13.0 mi (20.9 km) downstream from Cedar River, and at mile 18.0 (28.7 km).

DRAINAGE AREA.--12,499 mi^2 (32,372 km^2).

PERIOD OF RECORD.--October 1914 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1917, 1923-30, 1932. WSP 1438: Drainage area. WSP 1558: 1918, 1923-25 (M), 1929, WSP 1708: 1958.

GAGE.--Water-stage recorder. Datum of gage is 538.98 ft (164.281 m) above mean sea level, adjustment of 1912: Oct. 1, 1914 to Apr. 16, 1934, non recording gage and Apr. 16, 1934 to Sept. 30, 1972, water-stage recorder at datum 10 ft (3.05 m) higher.

REMARKS.--Records good except those for winter period, which are poor. Flow regulated by Coralville Lake (station 05483510) 67.3 mi (108.3 km) upstream, since Sept. 17, 1958. Several observations of water temperature were made during the year.

COOPERATION.--Eight discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--63 years, 6,599 ft^3/s (186.9 m^3/s), 7.17 in/yr (182 mm/yr), 4,781,000 acre-ft/yr (5,890 ha^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 94,000 ft^3/s (2,660 m^3/s) June 18, 1947, gage height, 16.14 ft (4.919 m), datum then in use; maximum gage height, 28.83 ft (8.728 m) Apr. 22, 1973; minimum daily discharge, 300 ft^3/s (8.50 m^3/s) Nov. 28, 1955, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 21,100 ft^3/s (598 m^3/s) Sept. 20, gage height, 18.23 ft (5.557 m); minimum daily, 460 ft^3/s (13.0 m^3/s) Jan. 21, 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	930	1060	780	850	800	1380	3700	2020	1110	4710	940	8820
2	910	1060	800	840	800	1300	3270	1910	1100	4840	940	8350
3	910	1020	840	820	810	1400	3080	1880	1080	2380	940	7120
4	910	1030	890	810	810	1530	3080	1870	1000	1430	984	6580
5	1070	1080	890	800	820	1510	3100	1920	1010	1130	966	5470
6	1200	1130	880	590	520	1420	3300	2030	1020			
7	1210	1060	860	580	530	1360	3240	2220	1040	987	973	4960
8	1110	1030	830	870	840	1360	3170	2070	1010	922	2650	4310
9	1030	988	780	560	840	1390	3110	2000	976	930	18800	3920
10	973	951	730	560	840	1540	2940	2010	960	931	14800	3540
11	962	951	780	560	540	1770	2830	1980	1100	930	8240	3120
12	930	940	740	560	560	2290	2700	1970	1340	930	5390	2940
13	900	940	740	560	580	2650	2550	1900	1390	930	3940	3010
14	900	910	740	560	590	2810	2450	1830	1110	929	3020	3180
15	870	920	700	550	630	2520	2350	1710	973	936	2800	3090
16	870	860	710	540	660	2480	2260	1610	922	1070	2960	2630
17	940	800	730	520	640	2490	2130	1790	909	1080	12800	2700
18	951	920	730	500	640	2430	1850	1790	911	1890	14100	3090
19	920	1020	740	480	620	2450	1770	1830	950	2030	9630	13800
20	930	1060	780	470	610	2560	1780	1390	937	1700	7490	20600
21	940	962	870	480	600	2640	1940	1600	967	1410	7160	20400
22	940	890	790	480	620	2620	2280	1650	933	1380	6800	15000
23	930	900	810	470	650	2610	2350	2070	919	1360	6800	11600
24	951	951	880	480	810	2470	2180	1610	906	1180	6310	10500
25	930	1030	730	480	1000	2410	2070	1360	910	1240	5910	11400
26	930	890	700	470	1220	2300	2050	1320	910	1540	5470	10400
27	940	920	710	470	1170	2510	2090	1250	910	1330	6460	10500
28	962	820	740	480	1160	2780	2170	1200	914	1620	7000	10200
29	995	600	750	480	---	3340	2200	1170	923	1170	5910	9210
30	1020	610	690	490	---	4090	2130	1130	1560	1010	5780	9270
31	1040	---	670	490	---	4140	---	1190	---	1000	6330	---
TOTAL	30004	28273	23580	16510	18510	70480	75070	52970	30670	45839	191023	227820
MEAN	968	942	761	533	581	2273	2536	1709	1022	1479	6162	7594
MAX	1210	1130	890	850	1220	4140	3700	2220	1560	4840	18800	20600
MIN	870	600	610	460	500	1300	1770	1130	906	929	940	2700
AC-FT	69510	56080	46770	32750	36710	139700	150900	105100	60830	90920	378900	451900
CAL YR 1976 TOTAL		1876869		MEAN 4591	MAX 36200	MIN 800	AC-FT 3326000					
WTR YR 1977 TOTAL		811719		MEAN 2224	MAX 20600	MIN 460	AC-FT 1610000					

05470000 SOUTH SKUNK RIVER NEAR AMES, IA

LOCATION.--Lat 42°04'05", long 93°37'02". In NW1/4 SW1/4 sec.23, T.84 N., R.24 W., Story County, Hydrologic Unit 07080105, on left bank 2.5 mi (4.0 km) north of Ames, 3.5 mi (5.6 km) downstream from Keigley Branch, 5.2 mi (8.4 km) upstream from Squaw Creek, and at mile 228.1 (367.0 km) upstream from mouth of Skunk River.

DRAINAGE AREA.--315 mi² (816 km²).

PERIOD OF RECORD.--July 1920 to September 1927, October 1932 to current year. Monthly discharge only for some periods, published in WSP 1308. Prior to October 1966, published as Skunk River near Ames.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1308: 1921, 1925-26, 1934-35 (M), 1937 (M), 1939 (M), 1947-50 (M), WRD Iowa, 1967: 1965, 1974: 1973 (P).

GAGE.--Water-stage recorder. Concrete control since July 21, 1924. Datum of gage is 893.61 ft (272.372 m) above mean sea level (Iowa Highway Commission benchmark). Prior to Aug. 25, 1921, nonrecording gage at same site and datum.

REMARKS.--Records fair except those for winter period and periods of no gage-height record, Oct. 1-19, Oct. 21 to Nov. 28, which are poor. Several diversions for irrigation above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--52 years, 149 ft³/s (4.220 m³/s), 5.42 in/yr (163 mm/yr), 108,000 acre-ft/yr (132 ha²/yr); median of yearly mean discharges, 110 ft³/s (3.12 m³/s) 4.7 in/yr (119 mm/yr), 79,700 acre-ft/yr (98.3 ha²/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,630 ft³/s (244 m³/s) June 10, 1954, gage height, 13.65 ft (4.164 m); maximum gage height, 13.90 ft (4.237 m) May 20, 1944; no flow at times in 1934, 1937, 1953-57, 1977.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1												
2	.07	2.1	.00	.00	.00	13	28	7.9	.00	.02	.00	594
3	.22	1.8	.00	.00	.00	12	38	8.4	.00	.03	.00	376
4	.69	2.7	.00	.00	.00	12	34	7.7	.00	.03	.00	276
5	1.5	3.1	.00	.00	.00	11	35	8.0	.00	.04	.00	244
6	1.2	1.0	.00	.00	.00	9.2	32	57	.00	.04	.00	222
7	.84	.30	.00	.00	.00	7.2	28	58	.00	.05	.00	183
8	.50	.04	.00	.00	.00	5.4	21	29	.00	.02	.00	175
9	.27	.08	.00	.00	.00	17	18	19	.00	.00	.00	241
10	.15	.25	.00	.00	.00	24	13	13	.00	.00	1840	484
11	.13	.60	.00	.00	.00	25	13	7.4	.00	.00	1770	399
12	.11	1.7	.00	.00	.00	35	12	2.2	.00	.00	896	279
13	.09	3.5	.00	.00	.00	47	10	1.6	.02	.02	416	238
14	.08	3.2	.00	.00	.00	40	11	1.4	.02	.02	249	786
15	.64	3.0	.00	.00	.00	27	11	.62	.02	.01	155	526
16	.86	2.8	.00	.00	.00	18	11	.24	.02	.00	229	354
17	.82	2.5	.00	.00	.00	14	9.7	.11	.02	.02	4230	271
18	.45	2.3	.00	.00	.00	12	11	.15	.03	.04	4010	231
19	.23	2.3	.00	.00	.00	27	12	.09	.03	.03	1460	237
20	.10	2.5	.00	.00	.00	33	13	.04	.04	.02	878	238
21	.05	2.7	.00	.00	.00	34	15	.67	.04	.02	585	196
22	.14	3.1	.00	.00	.00	32	20	3.1	.04	.07	420	168
23	.35	1.5	.00	.00	.00	21	17	.60	.02	.04	316	149
24	1.0	.70	.00	.00	.04	28	13	.13	.01	.02	257	185
25	3.1	.30	.00	.00	.15	25	11	.00	.00	.00	201	513
26	.38	.14	.00	.00	2.0	23	13	.00	.00	.00	158	457
27	.56	.05	.00	.09	14	23	11	.00	.00	.00	165	334
28	.85	.83	.00	.00	16	24	10	.00	.00	.00	192	261
29	1.2	.01	.00	.00	16	29	10	.00	.00	.00	777	786
30	1.8	.00	.00	.00	---	37	9.4	.00	.01	.00	654	194
31	2.8	.00	.00	.00	---	23	8.5	.00	.02	.00	391	264
32	2.5	---	.00	.00	---	26	---	.00	---	.00	355	---
TOTAL	23.69	44.31	.00	.00	48.19	715.8	498.6	226.25	.34	.54	21284.00	9287
MEAN	.76	1.48	.000	.000	1.72	23.1	16.6	7.30	.011	.017	687	310
MAX	3.1	3.5	.00	.00	16	47	38	58	.04	.07	4230	786
MIN	.05	.00	.00	.00	.00	5.4	8.5	.00	.00	.00	.00	149
CFSM	.002	.005	.000	.000	.005	.07	.05	.02	.000	.000	2.18	.98
IN.	.00	.01	.00	.00	.01	.08	.06	.03	.00	.00	2.51	1.10
AC-FT	47	88	.00	.00	95	1420	989	449	.7	1.1	42220	18420

CAL YR 1976 TOTAL 47605.30 MEAN 130 MAX 3180 MIN .00 CFSM .41 IN 5.62 AC-FT 94430
WTR YR 1977 TOTAL 32128.72 MEAN 88.0 MAX 4230 MIN .00 CFSM .28 IN 3.79 AC-FT 63730

SIUNK RIVER BASIN

05470500 SQUAW CREEK AT AMES, IA

LOCATION.--Lat 42°01'21", long 93°37'48", in NE1/4 NW1/4 sec.10, T.83 N., R.24 W., Story County, Hydrological Unit 07080105, on left bank 85 ft (20 m) downstream from Lincoln Way Bridge in Ames, 0.1 mi (0.2 km) downstream from College Creek, and 1.8 mi (2.9 km) upstream from mouth.

DRAINAGE AREA.--204 mi² (528 km²).

PERIOD OF RECORD.--May 1919 to April 1927, Mar 1965 to current year. Monthly discharge only for some periods, published in VSP 1308.

REVISED RECORDS.--VSP 1308: Drainage area, 1920-22 (M), 1923, 1924-25 (M), 1926, 1927 (M), WRD Iowa, 1965: 1965, WRD Iowa, 1971: 1970 (M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 881.00 ft (268.629 m) above mean sea level (levels by Iowa State University). Prior to Mar. 11, 1925, nonrecording gage at site 0.6 mi (1.0 km) upstream at different datum. Mar. 11, 1925, to Apr. 30, 1927, nonrecording gage at site 65 ft (20 m) upstream at datum about 4 ft (1 m) higher.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--20 years, 116 ft³/s (3.285 m³/s), 7.72 in/yr (196 mm/yr), 84,040 acre-ft/yr (104 hm³/yr); median of yearly mean discharges, 89 ft³/s (2.52 m³/s), 5.9 in/yr (150 mm/yr), 64,500 acre-ft/yr (79.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,300 ft³/s (320 m³/s) June 27, 1975, gage height, 14.00 ft (4.267 m); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 4, 1918, reached a stage of 14.5 ft (4.42 m), from flood marks, site and datum used 1919-25, discharge, 6,900 ft³/s (195 m³/s). Flood of Mar. 1, 1965, reached a stage of 10.7 ft (3.26 m), from graph based on gage readings, at present site and datum, discharge, 4,200 ft³/s (119 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28.3 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)
Aug. 8	0745	2,070 59.6	7.09 2.161	Aug. 16	1700	*2,430 68.8	*8.01 2.441

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	2.9	.00	.00	.00	.05	15	.32	.00	9.7	3.2	210
2	.03	2.5	.02	.00	.00	.30	16	1.7	.00	7.7	.45	132
3	.05	3.7	.00	.00	.00	2.2	11	2.6	.00	12	.26	120
4	2.3	4.4	.00	.00	.00	2.7	17	6.0	.00	8.9	.00	106
5	1.1	3.3	.00	.00	.00	1.2	11	66	.00	10	1.1	89
6	1.1	3.9	.00	.00	.00	1.3	6.0	27	.00	18	.19	71
7	.99	3.6	.00	.00	.00	1.7	4.7	12	.07	2.8	.11	73
8	.71	3.7	.00	.00	.00	2.8	3.6	3.6	.98	.02	1260	66
9	.17	3.5	.00	.00	.00	5.8	2.5	3.2	.01	.05	334	340
10	.04	3.8	.00	.00	.00	6.0	1.8	1.7	.01	.00	174	194
11	.00	4.6	.00	.00	.00	14	1.4	.90	.00	.04	84	120
12	.11	4.8	.00	.00	.00	25	1.5	.13	.03	.00	46	96
13	.11	4.5	.00	.00	.00	15	1.1	.07	.12	.00	30	80
14	.88	4.3	.00	.00	.00	9.0	1.1	.07	.78	.01	20	60
15	1.2	4.5	.00	.00	.00	5.6	1.7	1.5	.90	.20	107	52
16	1.1	4.1	.00	.00	.00	3.4	.90	4.0	3.5	.25	2240	44
17	1.4	3.9	.00	.00	.00	6.2	4.0	3.8	5.0	1.5	852	52
18	.90	3.2	.00	.00	.00	5.0	3.2	4.1	5.5	1.2	316	42
19	.87	3.3	.00	.00	.00	4.4	2.0	27	5.0	.85	182	40
20	.07	4.1	.00	.00	.00	3.5	4.0	13	8.3	.79	120	39
21	.90	4.2	.00	.00	.02	5.0	11	3.0	8.4	3.2	89	35
22	1.3	3.0	.00	.00	.04	1.9	2.9	2.0	2.8	1.3	62	32
23	2.2	.07	.00	.00	.09	1.6	2.0	.50	5.0	.60	50	53
24	4.3	.43	.00	.00	.22	1.5	1.3	.00	5.7	.25	40	123
25	.62	.90	.00	.00	.44	1.3	.90	.00	3.1	.10	36	111
26	.68	1.1	.00	.00	.58	1.0	.70	.00	3.7	.05	64	84
27	1.1	.80	.00	.00	.60	11	.80	.05	6.7	.02	66	66
28	1.6	.00	.00	.00	.60	18	.50	.07	8.3	51	485	55
29	1.7	.00	.00	.00	---	11	.32	.00	5.5	5.6	214	55
30	3.9	.03	.00	.00	---	6.1	.13	.00	9.6	.00	126	148
31	3.3	---	.00	.00	---	5.2	---	.00	---	.00	145	---
TOTAL	34.63	87.13	.02	.00	2.59	178.75	129.75	184.31	89.00	136.14	7147.31	2788
MEAN	1.12	2.90	.001	.00	.093	5.77	4.33	5.95	2.97	4.39	231	92.9
MAX	4.3	4.8	.02	.00	.60	25	17	66	9.6	51	2240	340
MIN	.00	.00	.00	.00	.00	.05	.13	.00	.00	.00	.00	.32
CFSM	.005	.01	.000	.000	.000	.03	.02	.03	.02	.02	1.13	.46
IN.	.01	.02	.00	.00	.00	.03	.02	.03	.02	.02	1.30	.51
AC-FT	69	173	.04	.00	5.1	355	257	386	177	270	14180	5530

CAL YR 1976 TOTAL 29969.38 MEAN 81.9 MAX 2310 MIN .00 CFSM .40 IN 5.47 AC-FT 59440
VTR YR 1977 TOTAL 10777.63 MEAN 29.5 MAX 2240 MIN .00 CFSM .15 IN 1.97 AC-FT 21380

05471000 SOUTH SKUNK RIVER BELOW SQUAW CREEK NEAR AMES, IA

LOCATION.--Lat 42°00'31", long 93°35'37", in NE1/4 NW1/4 sec.13, T.03 N., R.24 W., Story County, Hydrological Unit 07080105, on right bank 15 ft (5 m) downstream from bridge on county highway, 0.2 mi (0.3 km) downstream from Squaw Creek, 0.2 mi (0.3 km) upstream from bridge on U.S. Highway 30, 2 mi (3.2 km) southeast of Ames, and at mile 222.6 (358.2 km) upstream from mouth of Skunk River.

DRAINAGE AREA.--556 mi² (1,440 km²).

PERIOD OF RECORD.--October 1952 to current year. Prior to October 1966, published as Skunk River below Squaw Creek near Ames.

REVISED RECORDS.--WSP 438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 857.10 ft (261.244 m) above mean sea level. Prior to Oct. 1, 1973, at datum 10.00 ft higher.

REMARKS.--Records good except those for winter period, which are poor. Low flows are affected by pumpage by City of Ames from surficial aquifer and do not represent the natural flow of the stream. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--25 years, 298 ft³/s (8.155 m³/s), 7.03 in/yr (179 mm/yr), 298,700 acre-ft/yr (257 hm³/yr); median of yearly mean discharges, 230 ft³/s (6.51 m³/s), 5.6 in/yr (142 mm/yr), 187,000 acre-ft/yr (168 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,700 ft³/s (416 m³/s) June 27, 1975, gage height, 25.57 ft (7.794 m); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 19, 1944, reached a stage of 13 ft (4 m), from floodmarks, discharge, 10,000 ft³/s (283 m³/s), datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,400 ft³/s (181 m³/s) Aug. 16, gage height, 22.43 ft (6.837 m) at 2300 hours, no other peak above base of 2,500 ft³/s (70.8 m³/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.09	.03	.00	.00	.00	.03	34	1.6	.00	.00	4.5	894
2	.08	.03	.00	.00	.00	.02	38	1.8	.00	.00	4.9	574
3	.09	.02	.00	.00	.00	.00	30	2.2	.00	.00	.00	456
4	.11	.02	.00	.00	.00	.02	41	5.0	.00	.00	.00	404
5	.10	.02	.00	.00	.00	.03	29	75	.00	.00	.00	359
6	.12	.01	.00	.00	.00	.00	25	75	.00	.03	.00	309
7	.16	.01	.04	.00	.00	.00	19	33	.00	1.9	.00	304
8	.27	.01	.03	.00	.00	.00	18	16	.00	.00	1830	338
9	.30	.00	.02	.00	.00	.00	12	9.6	.00	.00	2170	878
10	.31	.00	.01	.00	.00	2.0	11	5.0	.00	.00	1910	730
11	.25	.00	.00	.00	.00	20	6.0	1.3	.00	.00	1230	510
12	.08	.00	.00	.00	.00	26	4.3	.25	.00	.00	608	420
13	.08	.00	.00	.00	.00	22	5.1	.05	.00	.00	470	894
14	.07	.00	.00	.00	.00	15	4.9	.02	.00	.00	350	650
15	.06	.00	.00	.00	.00	6.4	5.5	.00	.00	.00	531	447
16	.06	.00	.00	.00	.00	2.3	3.7	.00	.00	.00	5320	350
17	.06	.00	.00	.00	.00	1.0	7.0	.00	.00	.00	5140	350
18	.05	.00	.00	.00	.00	11	5.7	.00	.00	.00	1870	309
19	.05	.00	.00	.00	.00	19	8.8	9.2	.00	.00	1030	314
20	.04	.00	.00	.00	.00	22	13	11	.00	.00	686	272
21	.04	.00	.00	.00	.00	24	25	2.1	.00	.00	519	240
22	.04	.00	.00	.00	.00	18	18	2.7	.00	.00	321	219
23	.03	.00	.00	.00	.00	16	13	.20	.00	.00	280	272
24	.03	.00	.00	.00	.00	19	10	.00	.00	.00	240	588
25	.03	.00	.00	.00	.00	16	11	.00	.00	.00	177	574
26	.03	.00	.00	.00	.00	14	13	.00	.00	.00	195	437
27	.03	.00	.00	.00	.00	18	9.2	.00	.00	.00	208	352
28	.03	.00	.00	.00	.00	35	4.0	.00	.00	60	1120	299
29	.03	.00	.00	.00	---	27	3.4	.00	.00	14	826	286
30	.04	.00	.00	.00	---	18	2.9	.00	.00	.00	534	447
31	.04	---	.00	.00	---	16	---	.00	---	.00	570	---
TOTAL	2.79	.16	.10	.00	.00	367.80	430.5	251.03	.00	75.93	28144.40	13476
MEAN	.090	.005	.003	.000	.000	11.9	14.4	8.10	.000	2.45	908	449
MAX	.31	.03	.04	.00	.00	35	41	75	.00	60	5320	894
MIN	.03	.00	.00	.00	.00	.00	2.9	.00	.00	.00	.00	219
CFSM	.000	.000	.000	.000	.000	.02	.03	.02	.000	.004	1.63	.01
IN	.00	.00	.00	.00	.00	.02	.03	.02	.00	.01	1.88	.90
AC-FT	5.5	.3	.2	.00	.00	730	854	498	.00	181	55820	26730

CAL VR 1976 TOTAL 77993.01 MEAN 213 MAX 5530 MIN .00 CFSM .38 IN 5.22 AC-FT 154700
VTR VR 1977 TOTAL 42748.70 MEAN 117 MAX 5320 MIN .00 CFSM .21 IN 2.86 AC-FT 84790

SKUNK RIVER BASIN

05471800 SOUTH SKUNK RIVER NEAR OSKALOOSA, IA

LOCATION.--Lat 41°21'19", long 92°39'31", in NW1/4 SW1/4 sec.25, T.76 N., R.15 W., Mahaska County, Hydrologic Unit 07020105, on right bank 400 ft (122 m) upstream from bridge on U.S. Highway 63, 0.3 mi (0.5 km) downstream from Painter Creek, 4.0 mi (6.4 km) north of Oskaloosa, 52.7 mi (85.4 km) upstream from confluence with North Skunk River, and at mile 147.3 (237.0 km) upstream from mouth of Skunk River.

DRAINAGE AREA.--1,635 mi² (4,234 km²).

PERIOD OF RECORD.--October 1945 to current year. Prior to October 1956, published as Skunk River near Oskaloosa. Prior to October 1949, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 685.50 ft (208.940 m) above mean sea level. Prior to Nov. 21, 1947, nonrecording gage at site 400 ft (122 m) downstream at same datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--32 years, 867 ft³/s (24.55 m³/s), 7.20 in/yr (183 mm/yr), 628,100 acre-ft/yr (774 hm³/yr); median of yearly mean discharges, 790 ft³/s (22.4 m³/s) 6.6 in/yr (168 mm/yr), 572,400 acre-ft/yr (708 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft³/s (566 m³/s) June 18, 1947, gage height, 21.25 ft (6.480 m), from floodmarks; maximum gage height, 22.52 ft (6.864 m) Feb. 3, 1973, backwater from ice; minimum daily discharge, 1.8 ft³/s (0.051 m³/s) Oct. 11-13, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1944 reached a stage of 25.8 ft (7.86 m), from floodmarks, discharge, 37,000 ft³/s (1,050 m³/s), from rating curve extended above 18,000 ft³/s (510 m³/s) on basis of velocity-area study.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,830 ft³/s (165 m³/s) Aug. 18, gage height, 16.43 ft (5.008 m) at 0430 hours, no other peak above base of 5,000 ft³/s (142 m³/s); minimum daily, 4.4 ft³/s (0.12 m³/s) Jan. 16, 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	53	27	11	8.0	150	117	85	56	28	41	1660
2	44	57	27	8.4	10	180	117	67	51	28	41	1740
3	47	55	26	8.2	9.3	220	127	67	49	26	33	1430
4	50	54	25	6.0	8.7	200	133	71	48	25	25	2380
5	50	50	23	6.0	7.6	180	166	90	45	24	22	1400
6	60	51	22	5.8	7.2	155	152	96	42	23	25	1080
7	50	52	20	5.6	7.2	135	137	201	40	23	54	933
8	50	55	19	5.6	7.0	125	119	215	42	31	44	827
9	48	48	19	5.3	6.8	121	108	149	43	27	64	945
10	46	49	20	5.0	13	125	99	117	43	23	730	1100
11	44	53	20	5.0	31	158	90	99	41	21	1390	1010
12	43	57	20	5.0	60	286	83	93	39	20	1380	995
13	43	51	20	5.0	116	214	80	85	37	20	792	896
14	42	56	20	4.8	88	168	80	79	37	19	545	797
15	42	57	20	4.6	47	144	80	70	37	30	359	843
16	42	61	19	4.4	35	123	79	68	37	46	333	838
17	43	63	18	4.4	37	108	76	69	36	39	3940	759
18	43	67	19	4.6	38	102	73	68	45	35	8490	866
19	42	57	23	5.0	39	105	73	64	41	38	3200	1120
20	42	58	25	5.2	40	104	77	64	33	28	1840	974
21	42	56	25	5.3	41	105	90	76	31	38	1900	838
22	40	52	25	5.5	62	113	102	88	30	21	1340	747
23	42	45	24	5.6	110	117	96	103	34	19	901	708
24	44	54	24	5.6	180	105	87	90	37	23	730	658
25	46	47	24	5.6	210	99	79	74	42	20	619	764
26	48	42	24	5.6	220	93	73	67	43	18	863	988
27	50	38	23	5.6	160	95	74	61	37	17	684	1030
28	50	35	23	5.6	145	119	72	60	30	17	2030	940
29	51	32	22	5.6	---	175	69	63	28	17	3300	806
30	55	30	20	6.0	---	168	66	65	27	58	2200	727
31	61	---	15	6.6	---	134	---	59	---	43	1450	---
TOTAL	1458	1545	680	75.4	1743.8	4426	2874	2703	1181	845	36405	30799
MEAN	47.0	51.5	21.9	5.66	52.3	143	95.8	87.2	39.4	27.3	1174	1027
MAX	61	67	27	11	220	286	166	215	56	58	6490	2380
MIN	40	30	15	4.4	6.8	93	65	59	27	17	22	658
CFSM	.03	.03	.01	.003	.04	.09	.06	.05	.02	.02	.72	.63
IN.	.03	.04	.02	.00	.04	.10	.07	.06	.03	.02	.83	.70
AC-FT	2890	3080	1350	348	3460	8780	5700	5360	2340	1680	72210	61090

CAL YR 1976 TOTAL 297925.0 MEAN 814 MAX 12400 MIN 15 CFSM .50 IN 6.78 AC-FT 590900
WTR YR 1977 TOTAL 84835.2 MEAN 232 MAX 5490 MIN 4.4 CFSM .14 IN 1.93 AC-FT 168300

SKUNK RIVER BASIN

109

05472500 NORTH SKUNK RIVER NEAR SIGOURNEY, IA

LOCATION.--Lat 41°18'03", long 92°12'18", in NE1/4 SE1/4 sec.14, T.75 N., R.12 W., Keokuk County, Hydrologic Unit 07080108, on right bank 20 ft (6 m) downstream from bridge on State Highway 149, 1.2 mi (1.9 km) downstream from Cedar Creek, 2.2 mi (3.5 km) south of Sigourney, 4.0 mi (6.4 km) upstream from Bridge Creek, and 16.2 mi (26.1 km) upstream from confluence with South Skunk River.

DRAINAGE AREA.--730 mi² (1,890 km²).

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--VSP 1438: Drainage area. VSP 1558: 1946-47 (M).

GAGE.--Water-stage recorder. Datum of gage is 551.53 ft (168.586 m) above mean sea level. Prior to June 10, 1953, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--32 years, 424 ft³/s (12.01 m³/s), 7.89 in/yr (200 mm/yr), 307,200 acre-ft/yr (379 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,500 ft³/s (779 m³/s) Mar. 31, 1960, gage height, 25.33 ft (7.721 m); minimum daily, 0.1 ft³/s (2.8 dm³/s) Oct. 7 to Nov. 15, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1944 reached a stage of 22.8 ft (6.95 m), from floodmark, discharge, 14,500 ft³/s (411 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,800 ft³/s (51.0 m³/s) Sept. 19, gage height, 11.47 ft (3.496 m) at 2100 hours, no peak above base of 3,600 ft³/s (108 m³/s); minimum daily, 2.0 ft³/s (6.057 m³/s) Jan 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	18	12	3.5	3.5	55	96	25	20	11	9.0	395
2	11	19	10	2.6	4.4	50	74	24	18	9.9	10	507
3	12	23	9.0	2.0	4.1	52	62	51	22	8.3	13	513
4	12	20	9.0	2.3	3.9	47	69	37	33	7.4	15	474
5	22	18	8.6	2.7	3.9	42	84	52	47	8.8	11	441
6	22	16	9.0	2.9	3.9	35	82	78	22	8.5	9.7	385
7	16	14	9.0	2.9	3.9	35	88	400	15	6.3	18	266
8	17	13	8.2	2.9	3.9	48	76	282	14	5.7	205	203
9	19	12	7.4	2.9	3.5	54	60	153	13	5.4	314	185
10	16	12	7.8	2.9	3.3	48	47	91	12	4.7	195	181
11	13	15	7.0	3.1	7.0	68	46	66	13	5.5	150	176
12	12	14	6.6	3.1	28	248	40	53	13	5.6	89	150
13	11	14	5.8	2.9	26	283	37	45	17	5.7	60	145
14	12	10	5.4	2.7	20	207	35	39	14	5.9	45	131
15	12	14	6.6	2.7	18	121	34	35	12	6.2	36	116
16	11	12	7.4	2.7	18	83	32	31	12	59	38	104
17	12	13	8.6	2.9	35	69	31	27	12	54	440	106
18	12	13	9.0	3.1	39	56	32	25	11	20	1310	115
19	11	15	10	2.9	39	48	31	24	15	16	474	1490
20	12	15	12	2.9	36	48	31	24	91	12	200	1180
21	12	18	10	2.7	32	54	35	25	40	9.4	135	529
22	11	19	8.6	2.7	37	63	48	42	24	6.9	102	278
23	10	17	8.2	2.7	58	65	49	49	18	6.5	112	285
24	13	20	7.0	2.7	81	65	45	37	17	7.7	95	258
25	14	18	7.4	2.9	78	62	42	32	14	9.1	71	395
26	16	18	8.2	2.9	95	51	35	29	15	6.9	113	460
27	15	15	8.6	2.9	77	51	30	31	12	6.0	293	303
28	14	14	9.0	2.9	65	88	27	26	13	5.8	313	235
29	14	13	8.6	2.9	---	257	25	24	11	5.7	787	195
30	16	12	7.0	2.9	---	181	24	21	12	6.7	1430	159
31	19	---	5.0	2.9	---	136	---	25	---	8.5	632	---
TOTAL	434	464	255.0	87.7	829.2	2773	1450	1904	602	347.2	7724.7	10351
MEAN	14.0	15.5	8.26	2.83	29.6	89.5	48.3	61.4	20.1	11.2	249	345
MAX	22	23	12	3.5	95	283	95	400	91	59	1430	1490
MIN	10	10	5.0	2.0	3.3	35	24	21	11	4.7	9.0	104
CFSM	.02	.02	.01	.004	.04	.12	.07	.08	.03	.02	.34	.47
IN.	.02	.02	.01	.00	.04	.14	.07	.10	.03	.02	.39	.53
AC-FT	861	920	508	174	1640	5500	2880	3780	1190	689	15320	20530

CAL YR 1976 TOTAL 141737.1 MEAN 387 MAX 14000 MIN 5.0 CFSM .53 IN 7.22 AC-FT 281100
WTR YR 1977 TOTAL 27222.8 MEAN 74.6 MAX 1490 MIN 2.0 CFSM .10 IN 1.39 AC-FT 54000

SKUNK RIVER BASIN

05473800 CREEK NEAR MOUNT PLEASANT, IA

LOCATION.--Lat 41°00'52", long 91°34'49", in NW1/4 NW1/4 sec.29, T.72 N., R.6 W., Henry County, Hydrologic Unit 07080107, on left bank 12 ft (4 m) downstream from bridge on county highway, 100 ft (30 m) downstream from Lynn Creek, 0.7 mi (1.1 km) downstream from Brandywine Creek, and 3.7 mi (6.0 km) northwest of Court House at Mount Pleasant.

DRAINAGE AREA.--106 mi² (275 km²).

PERIOD OF RECORD.--October 1955 to current year.

REVISED RECORDS.--VSP 1628: 1958 (M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 630.53 ft (192.186 m) above mean sea level.

REMARKS.--Records fair except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--22 years, 64.3 ft³/s (1.821 m³/s), 8.24 in/yr (209 mm/yr), 46,590 acre-ft/yr (57.4 km³/yr); median of yearly mean discharges, 47.0 ft³/s (1.33 m³/s), 6.0 in/yr (153 mm/yr), 34,100 acre-ft/yr (42.0 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,500 ft³/s (297 m³/s) Apr. 22, 1973, gage height, 25.58 ft (7.797 m), on basis of contracted-opening measurement at gage at gage height 18.51 ft (5.642 m) and contracted-opening measurements of the 1973 peak flow at sites 2 mi (3 km) upstream (63 mi² (163 km²)) and 6 mi (10 km) downstream (115 mi² (298 km²)); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 3, 1948, reached a stage of about 27 ft (8.2 m), from floodmarks established by local residents, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 719 ft³/s (20.36 m³/s) Aug. 8, gage height, 6.12 ft (1.865 m), no peak above base of 900 ft³/s (25.5 m³/s); no flow Oct. 12-18, Jan. 21-Feb. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.19	5.4	.35	.07	.00	1.9	107	10	5.3	3.3	.02	1.5
2	.10	6.0	.35	.05	.00	1.7	93	13	4.6	4.3	.02	3.0
3	.06	4.5	.33	.04	.00	2.9	63	12	4.4	2.3	.03	7.3
4	.05	3.0	.33	.04	.00	3.3	82	21	4.0	.82	.02	23
5	13	2.1	.33	.03	.00	2.8	120	236	4.0	.50	.01	9.1
6	14	1.7	.32	.03	.00	2.4	87	165	3.9	.34	4.9	5.9
7	3.1	1.5	.23	.03	.00	2.6	69	163	3.3	.22	6.5	3.5
8	.14	1.2	.22	.02	.01	3.0	55	113	3.8	.15	353	1.7
9	.07	1.1	.21	.02	.10	3.7	48	80	5.0	.10	138	1.1
10	.03	1.2	.23	.02	5.0	3.9	45	61	5.3	.05	51	.55
11	.02	1.4	.21	.02	10	19	39	51	5.5	.04	23	.38
12	.00	1.3	.18	.02	16	134	33	42	5.8	.05	8.6	7.7
13	.00	1.2	.18	.02	15	66	31	37	4.9	.04	5.4	218
14	.00	.86	.16	.02	13	41	30	35	3.7	.03	2.6	119
15	.00	.73	.21	.01	10	29	27	31	2.7	.02	2.1	61
16	.00	.88	.24	.01	9.0	18	24	25	2.0	5.8	1.7	50
17	.00	.92	.31	.01	7.7	14	22	22	1.6	1.3	2.9	49
18	.00	.90	.35	.01	8.0	15	20	21	1.4	2.4	3.6	72
19	.02	.82	.36	.01	9.4	12	20	18	.99	.56	2.7	124
20	.24	.75	.34	.01	9.2	11	20	17	.86	.33	2.4	85
21	.88	.78	.25	.00	8.8	15	24	18	.73	3.0	2.5	57
22	1.7	.59	.22	.00	11	26	22	15	.49	9.3	2.7	46
23	1.2	.52	.25	.00	19	59	18	12	.42	.50	1.7	38
24	1.1	.52	.23	.00	15	75	17	10	.60	.35	1.0	87
25	1.3	.48	.26	.00	5.6	58	15	9.4	.60	.21	.31	78
26	1.5	.42	.26	.00	3.3	41	15	9.0	.42	.13	.54	55
27	1.8	.48	.24	.00	2.7	34	14	8.5	.29	.08	3.5	40
28	1.6	.45	.25	.00	2.0	97	13	8.3	.19	.05	2.7	31
29	1.8	.40	.23	.00	---	372	11	8.2	.14	.03	2.1	28
30	3.2	.33	.15	.00	---	235	9.3	7.6	1.1	.02	1.2	27
31	4.6	---	.10	.00	---	154	---	5.5	---	.03	.65	---
TOTAL	51.70	42.63	7.88	.49	180.81	1553.1	1193.3	1287.5	79.03	37.48	637.50	1329.70
MEAN	1.67	1.42	.25	.016	5.46	50.1	39.8	41.5	2.63	1.21	20.6	44.3
MAX	14	6.0	.36	.07	19	372	120	236	6.5	9.3	363	218
MIN	.00	.33	.10	.00	.00	1.7	9.3	6.5	.14	.02	.01	.38
CFSM	.02	.01	.002	.000	.06	.47	.39	.39	.03	.01	.19	.42
IN	.02	.01	.00	.00	.06	.55	.42	.46	.03	.01	.22	.47
AC-FT	103	85	16	1.0	359	3080	2370	2550	157	74	1260	2540

CAL YR 1976 TOTAL 18593.86 MEAN 50.8 MAX 3800 MIN .00 CFSM .48 IN 6.53 AC-FT 36880
WTR YR 1977 TOTAL 6401.12 MEAN 17.5 MAX 372 MIN .00 CFSM .17 IN 2.25 AC-FT 12700

SKUNK RIVER BASIN

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08474000 SKUNK RIVER AT AUGUSTA, IA

LOCATION.--Lat 40°45'13", long 91°16'40", in NE1/4 NE1/4 sec.26, T.69 N., R.4 W., Des Moines County, Hydrologic Unit 07080107, on left bank 300 ft (91 m) upstream from bridge on State Highway 394 at Augusta, 2.0 mi (3.2 km) upstream from Long Creek, and at mile 12.5 (20.1 km).

DRAINAGE AREA.--4,303 mi² (11,144 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September to November 1913, October 1914 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1915 (M), 1919-27 (M), 1932-34 (M), 1935, 1937-38 (M), 1942 (M). WSP 1438: Drainage area, WRD Iowa 1971: 1966 (M).

GAGE.--Water-stage recorder. Datum of gage is 521.24 ft (158.874 m) above mean sea level. Prior to Nov. 15, 1913, nonrecording gage at site 400 ft (122 m) upstream at datum about 0.7 ft (0.2 m) higher. May 27, 1915, to Jan. 14, 1935, nonrecording gage at site 400 ft (122 m) upstream at present datum.

REMARKS.--Records good except those for Aug. 1-15 which are fair and the winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--63 years (1914-77), 2,323 ft³/s (65.79 m³/s), 7.33 in/yr (186 mm/yr), 1,693,000 acre-ft/yr (2,080 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 65,800 ft³/s (1,892 m³/s) Apr. 23, 1973, gage height, 27.05 ft (8.245 m); minimum daily, 7 ft³/s (198 dm³/s) Aug. 27 to Sept. 1, 1934.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1, 1903, reached a stage of about 21 ft (6 m), discharge, about 45,000 ft³/s (1,270 m³/s). Stage and discharge for flood of April 1973 are believed to be the greatest since 1851.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,020 ft³/s (255 m³/s) Aug. 9, gage height, 9.23 ft (2.813 m) at 0800 hours, no peak above base of 15,000 ft³/s (425 m³/s); minimum daily, 22 ft³/s (6.62 m³/s) Feb. 6-8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	155	128	111	51	23	320	1500	238	170	95	130	3980
2	142	138	103	48	23	360	1160	254	149	97	144	3110
3	128	128	92	46	23	406	960	289	143	129	103	5240
4	116	123	105	40	23	437	860	417	139	118	84	6410
5	290	123	93	35	23	392	1010	2840	141	98	137	8010
6	516	134	94	31	22	337	1220	3860	136	89	178	3670
7	460	134	76	28	22	323	1080	3390	130	77	468	3080
8	326	127	69	26	22	316	883	2470	260	72	2140	2270
9	240	127	84	29	23	323	786	1630	234	69	8230	1940
10	202	134	84	29	33	343	683	1230	171	73	5270	1680
11	169	123	73	33	76	408	602	995	148	69	2890	1520
12	150	116	76	32	450	1610	529	817	145	69	1400	1880
13	139	110	73	29	700	2210	473	664	164	72	897	3710
14	120	104	70	27	610	1690	427	558	162	64	1040	5140
15	109	118	73	28	390	1210	391	478	141	61	1410	3900
16	106	114	76	28	260	949	361	434	132	119	1340	2350
17	100	118	78	27	220	719	340	388	123	120	1120	2240
18	100	117	84	27	210	604	312	349	113	92	855	2670
19	103	123	90	27	200	516	292	316	106	283	950	3410
20	106	123	90	26	160	500	282	285	102	549	3250	2820
21	107	127	70	26	130	492	320	279	91	325	3470	3660
22	103	124	70	26	160	524	417	275	87	325	3830	2870
23	102	113	87	26	300	692	721	366	89	310	3100	2160
24	111	128	76	26	420	820	605	385	90	144	2310	2090
25	114	136	78	25	460	830	487	289	90	123	1760	2080
26	117	141	81	25	465	773	410	280	90	106	1400	1950
27	126	164	81	25	380	674	380	267	90	103	1260	1910
28	116	99	81	25	330	880	325	243	90	95	1260	2020
29	110	108	70	24	---	3220	288	250	82	98	1660	1960
30	116	98	66	24	---	3370	254	241	93	90	1560	1780
31	123	---	60	23	---	2270	---	204	---	282	3070	---
TOTAL	5020	3700	2513	921	8188	29518	18308	24571	3910	4416	56496	98370
MEAN	162	123	81.1	29.7	220	920	610	793	130	142	1822	2946
MAX	516	164	111	51	700	3370	1500	3560	260	549	8230	6410
MIN	100	98	60	23	22	316	284	204	87	61	84	1520
CFSM	.04	.03	.02	.007	.05	.21	.14	.18	.03	.03	.42	.69
IN.	.04	.03	.02	.01	.05	.25	.16	.21	.03	.04	.49	.76
AC-FT	9960	7340	4980	1830	12210	56570	36310	48740	7760	8760	112100	175300

CAL YR 1976 TOTAL 793269 MEAN 2140 MAX 40000 MIN 60 CFSM .60 IN 6.77 AC-FT 1554000
WTR YR 1977 TOTAL 242981 MEAN 865 MAX 8230 MIN 22 CFSM .16 IN 2.10 AC-FT 481800

SKUNK RIVER BASIN

0547400 SKUNK RIVER AT AUGUSTA, IA--Continued

WATER QUALITY RECORDS

LOCATION.--Samples collected at bridge on State Highway 394 300 ft (91 m) downstream from gage.

PERIOD OF RECORD.--October 1976 to September 1976.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1976 to current year.

WATER TEMPERATURE: October 1976 to current year.

SUSPENDED-SEDIMENT: October 1976 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis. During periods of ice effect, sediment samples are collected in open water channel.

EXTREMES FOR PERIOD OF DAILY RECORD.--

TEMPERATURE: Maximum observed, 33.0°C July 14, 16, 19, 20, 1977; minimum, 0.0°C many days.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 7,010 mg/L July 21, 1976; minimum daily mean, 14 mg/L Feb. 21-23, 1977.

SEDIMENT LOADS: Maximum daily, 276,000 tons (250,000 tonnes) Apr. 24, 1976; minimum daily, 1.5 tons (1.4 tonnes) Feb. 8, 1977.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 4,040 mg/L Aug. 9; minimum daily mean, 14 mg/L Feb. 21-23.

SEDIMENT LOADS: Maximum daily, 91,000 tons (82,600 tonnes) Aug. 9; minimum daily, 1.5 tons (1.4 tonnes), Feb. 8.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	540	---	480	---	---	480	---	540	550	510	360	270
2	540	---	490	---	700	---	---	540	460	490	470	340
3	540	---	480	550	---	---	---	550	470	520	500	340
4	560	575	520	---	---	---	---	500	500	510	390	330
5	460	---	420	560	700	---	---	280	480	590	460	390
6	440	---	530	---	---	---	---	360	520	500	480	420
7	570	---	---	---	780	---	---	360	510	580	400	510
8	500	---	---	---	---	---	---	400	460	500	390	400
9	---	---	---	---	---	---	---	405	500	510	330	490
10	450	---	---	---	700	---	---	470	490	510	190	530
11	---	---	---	---	---	---	---	500	530	510	250	510
12	---	---	---	600	420	---	---	510	560	510	260	540
13	---	---	---	810	490	---	---	510	610	600	290	480
14	---	---	---	500	380	---	---	540	560	590	330	740
15	---	---	---	---	350	---	---	540	540	440	230	400
16	---	---	---	550	350	---	---	550	540	610	320	500
17	---	---	---	---	480	---	---	530	510	530	360	540
18	---	---	---	700	490	---	---	---	500	500	340	560
19	---	420	480	---	410	---	---	510	500	520	360	500
20	---	440	---	750	455	---	---	540	470	550	320	590
21	---	495	---	---	400	---	---	570	510	440	240	560
22	---	415	---	590	420	---	---	570	510	410	320	390
23	---	525	---	---	450	---	---	580	460	410	300	440
24	---	575	550	740	400	---	---	570	500	420	355	420
25	---	555	---	---	350	---	---	550	500	370	370	430
26	---	480	560	---	360	---	---	560	530	---	410	570
27	---	420	---	590	350	---	---	560	480	380	400	600
28	---	570	500	---	400	---	---	560	500	370	450	560
29	---	420	---	---	---	---	---	520	480	360	600	510
30	---	500	---	570	---	---	---	---	500	380	450	580
31	---	---	490	---	---	---	---	---	---	340	270	---

SKUNK RIVER BASIN

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0547400 SKUNK RIVER AT AUGUSTA, IA--Continued

WATER QUALITY RECORDS

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.0	9.0	0.0	---	---	0.5	10.0	18.0	25.0	27.0	27.0	23.0
2	20.0	9.0	0.0	---	0.0	2.0	10.0	20.0	26.0	28.0	26.0	24.0
3	18.0	8.0	0.0	0.0	---	3.0	11.0	20.0	27.0	29.0	29.0	22.0
4	18.0	4.0	0.0	---	---	0.0	11.0	19.0	25.0	31.0	26.0	22.0
5	12.0	6.0	0.0	0.0	0.0	0.0	7.0	17.0	30.0	32.0	24.0	22.0
6	13.0	6.0	0.0	---	---	1.0	9.0	18.0	24.0	30.0	25.0	22.0
7	13.0	6.0	---	---	0.0	4.0	11.0	19.0	24.0	30.0	26.0	23.0
8	13.0	6.0	---	---	---	6.0	11.0	20.0	22.0	29.0	22.0	26.0
9	15.0	5.0	0.0	---	---	7.0	15.0	19.0	23.0	29.0	21.0	25.0
10	15.0	5.0	---	---	0.0	11.0	18.0	20.0	25.0	29.0	24.0	23.0
11	16.0	2.0	---	---	---	10.0	19.0	20.0	25.0	30.0	24.0	27.0
12	18.0	1.0	---	0.0	0.0	7.0	20.0	20.0	25.0	29.0	24.0	20.0
13	18.0	1.0	---	0.0	0.0	7.0	19.0	23.0	24.0	30.0	26.0	19.0
14	18.0	2.0	---	0.0	0.0	10.0	20.0	24.0	25.0	33.0	24.0	18.0
15	14.0	2.0	---	---	0.0	10.0	18.0	25.0	28.0	33.0	20.0	18.0
16	10.0	3.0	---	0.0	0.0	11.0	19.0	25.0	27.0	31.0	25.0	18.0
17	10.0	3.0	---	---	0.0	8.0	19.0	25.0	29.0	30.0	25.0	18.0
18	8.0	8.0	---	0.0	0.0	6.0	21.0	27.0	27.0	30.0	25.0	21.0
19	8.0	5.0	1.0	---	0.0	6.0	21.0	25.0	28.0	33.0	26.0	19.0
20	8.0	6.0	---	0.0	0.0	6.0	22.0	25.0	27.0	33.0	22.0	19.0
21	7.0	3.0	---	---	0.0	6.0	18.0	25.0	25.0	31.0	23.0	19.0
22	7.0	3.0	---	0.0	0.0	6.0	18.0	26.0	25.0	29.0	23.0	19.0
23	7.0	1.0	---	---	0.0	7.0	17.0	26.0	26.0	30.0	23.0	25.0
24	7.0	3.0	1.0	0.0	0.0	9.0	17.0	29.0	26.0	30.0	23.0	20.0
25	7.0	5.0	---	---	0.0	9.0	17.0	30.0	30.0	29.0	23.0	20.0
26	7.0	4.0	1.0	---	0.0	9.0	18.0	29.0	31.0	28.0	24.0	20.0
27	7.0	6.0	---	0.0	0.0	12.0	21.0	29.0	31.0	27.0	27.0	20.0
28	7.0	6.0	1.0	---	0.0	11.0	19.0	26.0	27.0	27.0	23.0	20.0
29	7.0	6.0	---	---	---	12.0	19.0	26.0	29.0	30.0	24.0	20.0
30	7.0	6.0	---	0.0	---	10.0	16.0	27.0	25.0	30.0	23.0	18.0
31	9.0	---	0.0	---	---	10.0	---	27.0	---	28.0	23.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	70	29	75	26	17	5.1	30	4.1	70	4.3	53	46
2	63	24	80	30	20	5.6	30	3.9	64	4.0	82	80
3	98	34	83	29	29	7.2	96	12	61	3.0	65	71
4	129	40	82	17	25	7.1	90	8.7	60	3.7	67	67
5	235	104	60	20	21	5.3	57	5.4	61	3.8	62	66
6	290	404	55	20	47	12	54	4.5	52	3.1	87	79
7	97	120	55	20	50	10	48	3.6	32	1.9	52	45
8	86	75	37	13	37	6.8	51	3.6	26	1.5	66	56
9	73	47	67	20	26	5.9	45	3.5	35	2.2	54	47
10	87	47	51	18	23	5.2	46	3.6	45	4.1	62	76
11	95	43	39	10	24	4.7	47	4.2	50	10	360	397
12	89	36	31	9.7	22	4.5	43	3.7	60	97	3000	13000
13	87	33	33	9.0	20	3.9	36	2.7	112	212	2040	12200
14	84	27	23	6.5	20	3.8	68	5.0	94	155	800	3650
15	94	28	28	8.9	20	3.9	95	7.2	72	76	57	186
16	82	23	16	4.9	17	3.5	94	7.1	52	37	239	612
17	49	13	23	7.3	22	4.6	104	7.6	36	21	212	412
18	46	12	29	9.2	47	11	109	7.9	32	18	214	349
19	45	13	35	12	77	19	109	7.9	29	16	162	226
20	45	13	41	14	63	15	101	7.1	21	9.1	121	163
21	45	13	31	11	31	5.9	94	6.6	14	4.9	103	137
22	49	14	22	7.4	46	8.7	84	5.9	14	5.0	78	110
23	44	12	26	7.5	119	26	73	5.1	14	11	61	114
24	55	16	18	6.2	118	24	59	4.1	74	84	152	337
25	75	23	21	7.7	109	23	50	3.4	50	62	132	296
26	98	31	20	7.6	116	25	54	3.6	55	69	111	232
27	97	33	24	11	122	27	64	4.3	60	62	80	160
28	54	17	25	6.7	124	27	71	4.8	53	47	347	824
29	28	11	25	7.3	101	19	90	5.8	---	---	2140	18600
30	55	17	26	8.9	68	12	102	6.6	---	---	640	5820
31	71	24	---	---	43	7.0	90	5.6	---	---	470	2880
TOTAL	---	1456	---	384.7	---	350.7	---	170.1	---	1029.4	---	61338

SKUNK RIVER BASIN
0547400 SKUNK RIVER AT AUGUSTA, IA—Continued

WATER QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	263	1070	117	75	51	23	57	15	138	48	1120	11600
2	221	692	133	91	50	20	58	15	116	45	975	8190
3	174	451	132	103	50	19	54	19	74	21	1840	28600
4	142	329	201	225	49	18	26	8.3	86	15	1760	30500
5	157	428	348	2670	47	18	31	8.2	92	34	1050	14300
6	126	415	952	9250	52	19	45	11	103	50	745	7420
7	96	280	1740	15900	53	19	36	7.5	262	331	515	4280
8	87	207	1040	6940	58	41	50	9.7	1740	17000	448	2750
9	75	153	585	2420	39	25	49	9.1	4040	91000	319	1670
10	96	177	335	1110	44	20	32	6.3	1620	24300	222	1010
11	89	145	189	508	38	15	35	6.5	650	5070	188	772
12	92	131	157	345	35	14	37	6.9	392	1480	394	2000
13	91	116	184	276	49	22	32	6.2	214	518	678	6790
14	71	82	120	181	43	19	28	4.8	193	542	1060	14700
15	96	101	83	107	29	11	28	4.5	236	898	657	7360
16	78	76	50	59	41	15	35	11	228	825	286	1810
17	52	48	45	47	51	17	39	13	210	635	245	1490
18	80	67	54	51	58	18	45	11	130	300	579	4430
19	118	93	53	45	53	15	54	41	153	392	744	6850
20	100	76	96	74	40	11	31	46	650	5930	356	2710
21	83	72	78	59	37	9.1	38	33	631	5910	579	5720
22	119	134	65	48	42	9.9	137	120	620	5910	594	4600
23	115	224	83	82	34	8.2	137	115	802	6890	405	2380
24	73	119	63	65	36	8.7	43	17	579	3610	298	1680
25	92	121	115	90	53	13	51	17	408	1940	278	1560
26	122	135	110	83	49	12	69	20	326	1230	198	1040
27	95	92	86	62	40	9.7	88	24	231	786	175	902
28	107	94	70	46	52	13	75	19	198	674	153	834
29	114	89	41	28	56	14	55	15	228	1020	303	1600
30	109	75	58	38	54	15	48	12	210	885	272	1290
31	---	---	62	34	---	---	458	349	938	8450	---	---
TOTAL	---	5292	---	4114	---	492.6	---	1001.1	---	186739	---	180818
TOTAL LOAD FOR YEAR: 481195.5 TONS.												

TOTAL LOAD FOR YEAR: 481195.6 TONS.

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SUS- PEN- DED SED- IMENT DIS- CHARGE (MG/L) (00154)	SUS- PEN- DED SED- IMENT DIS- CHARGE (T/DAY) (00155)	SUS- SED. FALL DIAM. % FINER (70337)	SUS- SED. FALL DIAM. % FINER (70338)	SUS- SED. FALL DIAM. % FINER (70339)	SUS- SED. FALL DIAM. % FINER (70340)	SUS- SED. FALL DIAM. % FINER (70342)	SUS- SED. FALL DIAM. % FINER (70343)	SUS- SED. FALL DIAM. % FINER (70344)
						.002 MM THAN	.004 MM THAN	.008 MM THAN	.016 MM THAN	.062 MM THAN	.125 MM THAN	.250 MM THAN
AUG 08...	1900	21.0	7780	3270	89700	51	57	71	82	99	99	100
SEP 03...	1900	22.0	6740	2520	45900	51	57	64	75	98	99	100

MISSISSIPPI RIVER MAIN STEM

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05474500 MISSISSIPPI RIVER AT KEOKUK, IA
(National stream-quality accounting network station)

LOCATION.--Lat 40°23'37", long 91°22'27", in SE1/4 SW1/4 sec.30, T.65 N., R.4 W., Lee County, Hydrologic Unit 07080104, near right bank in tailwater of dam and powerplant of Union Electric Co. at Keokuk, 0.2 mi (0.3 km) upstream from bridge on U.S. Highway 136, 2.7 mi (4.3 km) upstream from Des Moines River, and at mile 364.2 (586.0 km) upstream from Ohio River.

DRAINAGE AREA.--119,000 mi² (308,000 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1878 to current year.

GAGE.--Water-stage recorder. Datum of gage is 477.41 ft (145.815 m) above mean sea level (levels by Corps of Engineers); 477.83 ft (145.843 m) above mean sea level, adjustment of 1912; 477.34 ft (145.493 m) above mean gulf level; and 484.65 ft (147.721 m) above Memphis datum. Jan. 1, 1878, to May 1913, nonrecording gage at Galland (formerly Nashville), 8 mi (12.9 km) upstream; zero of gage was set to low-water mark of 1864, or 498.94 ft (151.457 m) above mean sea level, adjustment of 1912.

REMARKS.--Discharge computed from records of operation of turbines in powerplant and spillway gates in dam. Minor flow regulation caused by powerplant since 1913 and navigation dams. Records for May 1913 to September 1937 adjusted for change in contents in Keokuk Reservoir, those after September 1937 unadjusted.

COOPERATION.--Records furnished by Union Electric Co.

AVERAGE DISCHARGE.--99 years, 62,170 ft³/s (1,761 m³/s), 7.09 in/yr (180 mm/yr), 45,040,000 acre-ft/yr (55,500 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 344,000 ft³/s (9,740 m³/s) Apr. 24, 1973; maximum gage height, 23.35 ft (7.117 m) Apr. 24, 1973; minimum daily discharge, 5,000 ft³/s (142 m³/s) Dec. 27, 1933.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 6, 1881, reached a stage of 21.0 ft (6.40 m), present site and datum, estimated as 13.5 ft (4.11 m) at Galland, discharge, 380,000 ft³/s (10,200 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 79,800 ft³/s (2,260 m³/s) Aug. 9; minimum daily, 10,700 ft³/s (303 m³/s) Nov. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12300	21000	14600	17900	16900	34700	61200	50900	18000	46100	16600	35600
2	12200	21400	14100	17800	16700	34400	56300	47100	23800	41400	16300	42700
3	14600	18500	15700	17900	16700	31800	48300	45600	40700	28500	20700	52500
4	13000	20100	15600	16200	14200	29800	54600	38400	26600	34800	23100	61900
5	15300	21400	11200	16900	14100	28800	55500	34100	25400	30000	23000	63700
6	18800	20500	12800	10600	15300	33000	59000	42900	27300	30400	26200	59900
7	20200	20200	13000	17300	15400	34300	61600	44400	26200	27600	30100	54200
8	22200	17200	14100	17700	16700	33400	63500	43600	28400	26700	46200	51700
9	19200	12000	14100	18400	17300	30500	59900	37500	41900	27500	79800	48800
10	10900	11100	15000	18800	16000	33900	56000	29800	41100	37300	65300	47200
11	12700	10700	17200	17400	15700	36400	47600	25900	36100	39100	53500	47300
12	12500	12500	16900	16800	20200	45400	44000	28100	37600	39100	40300	46800
13	16400	15100	14400	17100	22000	54300	41600	27300	31100	37000	37500	53000
14	17300	17800	14900	17600	25100	58100	41800	27100	24000	32800	33700	52400
15	15700	19500	17400	17200	22600	60600	36600	23900	17700	30400	32900	53300
16	16900	18800	15500	17700	19700	53000	31400	22600	17900	24400	18700	48300
17	16200	17600	16500	16700	19500	54700	32200	22800	19700	20600	34800	47800
18	15600	17400	17700	16200	20000	55000	30700	23300	20600	25000	36700	49900
19	16200	17900	21000	17200	19600	60100	34400	23100	27700	45700	38800	63900
20	10400	18500	21400	17700	19700	60100	41700	25400	33500	60600	31700	75100
21	18100	18700	17800	17400	20300	57500	44300	30800	32900	55200	29100	74200
22	16300	17600	17500	16000	20500	55200	54700	34900	34600	30300	29400	60000
23	16700	21400	20300	16200	21100	54600	54500	34400	30100	18700	31700	53300
24	17800	21300	17700	17000	28000	43000	52600	33400	26800	16800	31400	47500
25	18100	20400	16700	17400	40400	44400	55300	33100	24700	20200	31200	52400
26	17600	18700	18900	18100	53400	35400	55400	30400	25800	21800	30800	58200
27	17000	18000	16000	16400	52300	35000	50500	26700	25100	30900	28500	60100
28	15900	15400	16100	16600	42000	35600	51000	28200	23100	29500	26900	64000
29	14000	12400	16600	15400	---	46600	49600	20600	23400	28100	32500	64500
30	15800	13300	16600	17100	---	60100	51200	21000	26900	21200	31200	65200
31	17400	---	17600	16000	---	60400	---	19600	---	20000	32300	---
TOTAL	511100	527200	502300	535700	643400	1404200	1478600	974100	825200	989400	1042900	1655400
MEAN	16490	17000	16200	17200	20750	45280	47370	31420	26620	31920	33640	51800
MAX	22200	21400	21400	18800	53400	60600	63500	50900	41900	60600	79800	75100
MIN	10200	10700	11200	10600	14100	28000	30700	19600	17700	18800	16300	35600
CFSM	.14	.16	.14	.16	.19	.38	.41	.26	.23	.27	.20	.46
IN.	.16	.16	.16	.17	.20	.44	.46	.30	.21	.31	.33	.52
AC-FT	1014000	1046000	996000	1063000	1276000	2705000	2923000	1932000	1637000	1962000	2069000	3283000

CAL YR 1976 TOTAL 17922300 MEAN 40970 MAX 214000 MIN 10700 CFSM .41 IN 5.60 AC-FT 35550000
MTR YR 1977 TOTAL 11069600 MEAN 30300 MAX 79800 MIN 10700 CFSM .26 IN 3.47 AC-FT 22000000

MISSISSIPPI RIVER MAIN STEM

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Samples collected at bridge on U.S. Highway 136, 0.2 mi (0.3 km) downstream from discharge station.

PERIOD OF RECORD.--Water years 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	DIS- SOLVED SILICA (SI02) (MG/L) (00955)	TOTAL IRON (FE) (UG/L) (01045)	DIS- SOLVED IRON (FE) (UG/L) (01046)	TOTAL MANGANESE (MN) (UG/L) (01055)	SUS- PENDED MANGANESE (MN) (UG/L) (01054)	DIS- SOLVED MANGANESE (MN) (UG/L) (01056)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)
OCT										
26...	1100	37000	.4	--	--	--	--	--	40	21
JAN										
26...	1200	25500	4.2	1500	120	120	60	60	52	28
FEB										
16...	1300	26000	8.0	--	--	--	--	--	53	22
MAR										
08...	1130	38000	8.2	--	--	--	--	--	44	20
APR										
12...	1300	55500	.1	--	--	--	--	--	45	19
MAY										
10...	1300	48000	1.6	--	--	--	--	--	37	16
JUL										
12...	1400	48000	.8	--	--	--	--	--	38	17
AUG										
09...	1130	84000	1.0	--	--	--	--	--	37	16
SEP										
13...	1130	59000	4.3	840	30	80	80	0	43	19

DATE	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	ALKA- LINITY AS CACO3 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00530)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)
OCT										
26...	14	2.4	201	0	165	28	17	.2	.20	1.1
JAN										
26...	18	2.6	249	0	200	33	24	.2	.69	1.4
FEB										
16...	18	3.2	230	0	190	31	24	.2	.93	1.6
MAR										
08...	15	4.7	200	0	160	21	22	.2	1.3	2.0
APR										
12...	18	3.4	150	--	120	32	22	.1	.35	2.2
MAY										
10...	12	3.4	180	0	120	37	15	.2	.80	1.8
JUL										
12...	13	3.0	160	0	130	36	19	.2	--	--
AUG										
09...	12	3.6	160	0	130	29	16	.2	.34	1.4
SEP										
13...	10	3.1	180	0	160	31	16	.2	1.1	--

DATE	TOTAL NITRO- GEN (N) (MG/L) (00600)	TOTAL NITRO- GEN (NO3) (MG/L) (01887)	TOTAL PHOS- PHORUS (P) (MG/L) (00865)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (070300)	DIS- SOLVED SOLIDS (SUM OF TUENTS) (MG/L) (070301)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (070303)	DIS- SOLVED SOLIDS (TONS PER DAY) (070302)	HARD- NESS (CA,MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	PERCENT SODIUM (00932)
OCT										
26...	1.3	5.8	.17	216	222	.29	21600	190	21	14
JAN										
26...	2.0	8.9	.23	297	282	.40	20400	230	29	14
FEB										
16...	2.5	11	.26	288	273	.39	20200	220	34	15
MAR										
08...	3.3	16	.34	284	234	.39	29100	190	28	14
APR										
12...	2.6	11	.19	255	214	.35	38400	190	68	17
MAY										
10...	2.4	11	.26	216	196	.29	28000	160	35	14
JUL										
12...	--	--	--	216	206	.29	28000	160	34	14
AUG										
09...	1.7	7.7	.40	211	194	.29	47900	160	27	14
SEP										
13...	--	--	.23	214	214	.29	34100	180	34	11

MISSISSIPPI RIVER MAIN STEM

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05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	SODIUM AD- SORP- TION RATIO (00931)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (JTU) (00070)	CARBON DIOXIDE (CO2) (MG/L) (00405)	TOTAL PHYTO- PLANK- TON (CELLS PER ML) (60050)	FECAL COLI- FORM (.7UM-MF (COL./ 100 ML) (31625)	FECAL STREP- TOCOCCI KF AGAR (COL. PER 100 ML) (31673)	TOTAL ORGANIC CARBON (C) (MG/L) (00580)
OCT 26...	.4	410	8.1	9.0	4	2.6	5300	45	57	--
JAN 26...	.5	460	8.2	2.0	3	2.5	--	42	150	6.9
FEB 16...	.5	460	8.6	1.0	4	.9	1200	B26	220	--
MAR 08...	.5	410	8.1	4.5	5	2.5	--	46	120	--
APR 12...	.6	400	--	13.5	15	--	--	200	160	--
MAY 10...	.4	340	8.2	21.5	25	1.5	20000	170	130	--
JUL 12...	.4	390	7.6	--	8	6.4	43000	210	120	--
AUG 09...	.4	347	7.6	25.5	60	6.4	--	140	--	--
SEP 13...	.3	380	8.3	22.0	15	1.4	3400	160	120	6.9

DATE	TOTAL ARSENIC (AS) (UG/L) (01002)	SUS- PENDE D ARSENIC (AS) (UG/L) (01001)	DIS- SOLVED ARSENIC (AS) (UG/L) (01000)	TOTAL CAD- MIUM (CD) (UG/L) (01027)	SUS- PENDE D CAD- MIUM (CD) (UG/L) (01026)	DIS- SOLVED CAD- MIUM (CD) (UG/L) (01025)	TOTAL CHRO- MIUM (CR) (UG/L) (01034)	SUS- PENDE D CHRO- MIUM (CR) (UG/L) (01031)	DIS- SOLVED CHRO- MIUM (CR) (UG/L) (01030)	TOTAL COBALT (CO) (UG/L) (01037)
OCT 26...	--	--	--	--	--	--	--	--	--	--
JAN 26...	1	0	1	3	1	2	<10	<7	3	0
FEB 16...	--	--	--	--	--	--	--	--	--	--
MAR 08...	--	--	--	--	--	--	--	--	--	--
JUL 12...	--	--	--	--	--	--	--	--	--	--
AUG 09...	--	--	--	--	--	--	--	--	--	--
SEP 13...	2	0	5	<10	<9	1	10	10	0	<50

DATE	SUS- PENDE D COBALT (CO) (UG/L) (01036)	DIS- SOLVED COBALT (CO) (UG/L) (01035)	TOTAL COPPER (CU) (UG/L) (01042)	SUS- PENDE D COPPER (CU) (UG/L) (01041)	DIS- SOLVED COPPER (CU) (UG/L) (01040)	TOTAL LEAD (PB) (UG/L) (01051)	SUS- PENDE D LEAD (PB) (UG/L) (01050)	DIS- SOLVED LEAD (PB) (UG/L) (01049)	TOTAL MERCURY (HG) (UG/L) (71900)	SUS- PENDE D MERCURY (HG) (UG/L) (71895)
OCT 26...	--	--	--	--	--	--	--	--	--	--
JAN 26...	0	0	14	8	6	8	0	9	1.2	.0
FEB 16...	--	--	--	--	--	--	--	--	--	--
MAR 08...	--	--	--	--	--	--	--	--	--	--
JUL 12...	--	--	--	--	--	--	--	--	--	--
AUG 09...	--	--	--	--	--	--	--	--	--	--
SEP 13...	<50	0	<10	<7	3	<100	<92	8	.4	.4

MISSISSIPPI RIVER MAIN STEM

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued
(National stream-quality accounting network stations)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED MERCURY (NG) (UG/L) (71890)	TOTAL SELE- NIUM (SE) (UG/L) (01147)	SUS- PENDE SELE- NIUM (SE) (UG/L) (01148)	DIS- SOLVED SELE- NIUM (SE) (UG/L) (01145)	TOTAL ZINC (ZN) (UG/L) (01092)	SUS- PENDE ZINC (ZN) (UG/L) (01091)	DIS- SOLVED ZINC (ZN) (UG/L) (01090)	SUS- PENDE SEDI- MENT (MG/L) (80154)	SUS- PENDE SEDI- MENT DIS- CHARGE (T/DAY) (80155)
OCT 26...	--	--	--	--	--	--	--	12	1200
JAN 26...	1.2	0	0	0	20	0	50	--	--
FEB 16...	--	--	--	--	--	--	--	18	1260
MAR 08...	--	--	--	--	--	--	--	27	2770
JUL 12...	--	--	--	--	--	--	--	29	3760
AUG 09...	--	--	--	--	--	--	--	400	90700
SEP 13...	.0	0	0	0	30	20	10	--	--

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SUS- PENDE SEDI- MENT (MG/L) (80154)	SUS- PENDE SEDI- MENT DIS- CHARGE (T/DAY) (80155)	SUS. SED. SIEVE DIAM. X FINER THAN .062 MM (70331)
OCT 26...	1100	9.0	37000	12	1200	--
FEB 16...	1300	1.0	26000	18	1260	74
MAR 08...	1130	4.5	38000	27	2770	94
JUN 21...	1330	--	32900	37	3290	85
JUL 12...	1400	--	48000	29	3760	74
AUG 09...	1130	25.5	84000	400	90700	84

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	OCT 26, 76 1100	FEB 16, 77 1300	MAY 10, 77 1300	JUL 12, 77 1400	SEP 13, 77 1130					
TOTAL CELLS/ML	5300	1200	20000	43000	3400					
DIVERSITY: DIVISION	1.3	1.0	1.2	1.1	1.6					
...CLASS	1.3	1.1	1.2	1.1	1.6					
...ORDER	1.9	1.3	1.7	1.2	1.9					
...FAMILY	2.1	1.3	2.2	1.2	2.2					
...GENUS	2.5	1.4	2.8	0.0	2.5					
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
...CHARACIACEAE										
...SCHROEDERIA										
...COELASTRACEAE										
...COELASTRUM										
...HYDRODICTYACEAE										
...PEDIASTRUM										
...MICRACTINIACEAE										
...MICRACTINIUM	37	1								
...OOCYSTACEAE										
...ANKISTRODESMUS	37	1	15	1					29	1
...CHODATELLA										
...DICTYOSPHAERIUM										
...FRANCEIA										
...KIRCHNERIELLA	37	1							29	1
...OOCYSTIS									57	2
...SELENASTRUM	150	3								
...TETRAEDRON	37	1								
...WESTELLA	150	3								
...SCENEDESMACEAE										
...ACTINASTRUM										
...CRUCIGENIA										
...SCENEDESMUS	440	8	9	1					400	12
...TETRASTRUM									230	7
...TETRASPORALES										
...COCCONVACEAE										
...ELAKATOTHRIX										
...PALMELLACEAE										
...GLOEOCYSTIS										
...ULOTRICHNALES										
...ULOTRICHACEAE										
...CHLOROCOCCALES										
...OOCYSTACEAE										
...GLOEOACTINIUM										
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCAEAE										
...CYCLOTELLA	370	7	220	18	550	3	740	2	57	2
...MELOSIRA	440	8							880	26
...STEPHANODISCUS										
...PENNALES										
...FRAGILARIACEAE										
...ASTERIONELLA										
...FRAGILARIA										
...SYNEDRA										
...NITZSCHIAEAE										
...NITZSCHIA	110	2							28	1
CHRYSTOPHYCEAE										
..CHRYSONOMADALES										
...CHROMULINACEAE										
...CHRYSOCOCCLUS										
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROCOCCALES										
...CHROCOCCACEAE										
...AGMENELLUM										
...ANACYSTIS	2700	51								
...HORMOGONALES										
...NOSTOCACEAE										
...ANABAENA										
...OSCILLATORIACEAE										
...LYNGBYA	370	7								
...OSCILLATORIA	370	7	850	71	2000	10			570	17
...CHROCOCCALES										
...CHROCOCCACEAE										
...GOMPHOSPHAERIA										
EUGLENOPHYTA (EUGLENOIDS)										
..CRYPTOPHYCEAE										
...CRYPTOMONIDALES										
...CRYPTOMONODACEAE										
...CRYPTOMONAS										
...EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
...TRACHELONONAS	37	1							28	1

DES MOINES RIVER BASIN

05476500 DES MOINES RIVER AT ESTHERVILLE, IA

LOCATION.--Lat 43°23'51", long 94°50'38", in SW1/4 SE1/4 sec.10, T.99 N., R.34 W., Emmet County, Hydrologic Unit 07100002, on right bank in city park, 1,200 ft (366 m) downstream from bridge on State Highway 9 at Estherville, 0.1 mi (0.2 km) upstream from School Creek, 2.3 mi (3.7 km) upstream from Brown Creek, and at mile 404.2 (650.4 km).

DRAINAGE AREA.--1,372 mi² (3,553 km²).

PERIOD OF RECORD.--October 1951 to current year. Prior to November 1951, monthly discharge only, published in WSP 1728.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,247.55 ft (380.263 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--26 years, 278 ft³/s (7.873 m³/s), 2.75 in/yr (70 mm/yr), 201,400 acre-ft/yr (248 hm³/yr); median of yearly mean discharges, 210 ft³/s (5.95 m³/s), 2.1 in/yr (53 mm/yr), 152,000 acre-ft/yr (187 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,000 ft³/s (453 m³/s) Apr. 12, 1969, gage height, 17.68 ft (5.389 m), from floodmark; no flow Jan. 16-18, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 380 ft³/s (10.8 m³/s) Mar. 19, gage height, 3.35 ft (1.021 m), no peak above base of 1,500 ft³/s (42.5 m³/s); maximum gage height, 3.37 ft (1.027 m) Mar. 12, backwater from ice; no flow Jan. 16-18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	.90	2.0	1.2	.30	19	94	36	19	170	9.0	5.4
2	.98	1.3	1.9	1.2	.29	15	94	32	18	144	8.8	3.9
3	.78	1.9	1.9	1.2	.28	10	90	29	17	132	4.9	5.2
4	1.1	1.8	1.9	1.1	.28	7.6	83	35	16	109	4.9	8.2
5	1.1	1.8	1.8	1.0	.28	6.8	83	41	13	91	4.4	9.7
6	1.3	1.8	1.8	.92	.28	7.5	80	103	11	84	2.3	10
7	1.0	1.1	1.8	.82	.29	12	71	213	10	80	1.7	9.3
8	1.0	1.5	1.8	.74	.32	65	68	131	12	82	2.3	7.2
9	1.0	2.5	1.8	.66	.80	183	83	88	11	70	3.6	7.4
10	.71	4.5	1.8	.58	.80	204	53	68	10	71	3.2	5.6
11	.96	4.0	1.8	.52	1.3	220	49	54	8.7	72	3.2	4.6
12	2.5	2.8	1.8	.45	1.7	290	55	49	7.6	64	2.1	4.5
13	1.7	2.3	1.8	.38	1.7	335	61	46	8.7	58	1.8	5.9
14	1.0	2.3	1.9	.06	1.6	270	54	42	8.0	54	.95	7.9
15	.98	3.2	1.9	.02	1.8	206	57	40	12	47	8.1	6.4
16	.61	3.7	1.9	.00	1.2	146	59	36	22	41	15	5.1
17	.49	4.2	1.9	.00	1.3	109	56	28	64	35	24	5.2
18	.67	5.0	1.9	.00	1.3	206	66	27	85	34	32	5.2
19	1.1	5.2	1.9	.03	1.2	341	66	31	104	29	21	5.7
20	.99	5.2	1.9	.10	1.2	323	71	31	85	26	16	5.2
21	.98	4.9	1.9	.25	1.8	219	76	28	69	24	14	5.4
22	.85	4.3	1.8	.30	1.8	167	59	31	81	23	12	5.6
23	1.4	3.9	1.8	.30	7.0	155	65	30	91	23	13	9.1
24	1.3	3.6	1.8	.30	8.4	133	59	29	103	22	12	11
25	.84	3.6	1.7	.30	11	109	57	28	112	19	11	19
26	.71	3.4	1.7	.30	15	90	52	28	114	16	9.1	20
27	.79	3.0	1.7	.30	19	82	49	26	113	13	8.4	16
28	.64	2.7	1.6	.30	21	86	43	24	119	12	7.7	13
29	.8	2.3	1.6	.30	---	99	39	21	121	9.3	7.3	13
30	.72	2.1	1.5	.30	---	94	38	20	175	6.9	6.2	71
31	.95	---	1.3	.30	---	86	---	19	---	7.4	6.1	---
TOTAL	31.05	90.80	55.6	14.24	102.62	4296.8	1929	1444	1641.0	1659.6	274.06	310.7
MEAN	1.00	3.03	1.79	.46	3.67	139	64.3	46.6	54.7	53.9	8.84	10.4
MAX	2.8	5.2	2.0	1.2	21	341	94	213	175	170	32	71
MIN	.49	.90	1.3	.00	.28	6.8	38	19	7.6	6.9	.96	3.9
CFSM	.001	.002	.001	.000	.003	.10	.05	.03	.04	.04	.006	.008
IN.	.00	.00	.00	.00	.00	.12	.05	.04	.04	.05	.01	.01
AC-FT	62	180	110	28	204	8520	3830	2860	3250	3310	844	616

CAL YR 1976 TOTAL 32498.02 MEAN 55.8 MAX 900 MIN .30 CFSM .07 IN .88 AC-FT 64460
WTR YR 1977 TOTAL 11859.47 MEAN 32.5 MAX 341 MIN .00 CFSM .02 IN .32 AC-FT 23520

DES MOINES RIVER BASIN

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05476750 DES MOINES RIVER AT HUMBOLDT, IA

LOCATION.--Lat 42°43'12", long 94°13'08", in SE1/4 SW1/4 sec.1, T.91 N., R.29 W., Humboldt County, Hydrologic Unit 07100002, on left bank 5 ft (2 m) downstream from First Avenue bridge in city of Humboldt, about 700 ft (213 m) below dam, 3.2 mi (5.1 km) upstream from Indian Creek, 3.9 mi (6.3 km) upstream from East Fork Des Moines River, and at mile 334.3 (537.9 km).

DRAINAGE AREA.--2,256 mi² (5,843 km²).

PERIOD OF RECORD.--October 1964 to current year. Prior to October 1970, published as West Fork Des Moines River at Humboldt.

GAGE.--Water-stage recorder. Datum of gage is 1,053.54 ft (321.119 m) above mean sea level. Prior to Oct. 3, 1966, nonrecording gage at same site and datum.

REMARKS.--Records fair except those for winter period, which are poor. Daily nonrecording gage readings available in district office for period Mar. 7, 1940, to Sept. 30, 1964. Discharge not published for this period because of extreme regulation at dam 700 ft (213 m) upstream from gage. Power generation and streamflow regulation discontinued August 1964. Low flow discharges occasionally affected by minor regulation. Several observations of water temperature were made during the year.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--12 years, 705 ft³/s (19.97 m³/s), 4.24 in/yr (108 mm/yr), 510,800 acre-ft/yr (630 hm³/yr); median of yearly mean discharges, 590 ft³/s (16.7 m³/s) 3.6 in/yr (91 mm/yr), 427,000 acre-ft/yr (526 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,000 ft³/s (510 m³/s) Apr. 14, 1969, gage height, 15.40 ft (4.694 m); minimum daily, 13 ft³/s (0.37 m³/s) Nov. 12, 1976, Jan. 12 to Feb. 2, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 23, 1947, reached a stage of 12.2 ft (3.72 m), discharge, 11,000 ft³/s (312 m³/s) at present site and datum.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 636 ft³/s (18.0 m³/s) Mar. 12, gage height, 4.17 ft (1.271 m), no peak above base of 2,600 ft³/s (79.3 m³/s); minimum daily, 13 ft³/s (0.37 m³/s) Nov. 12, Jan. 12 to Feb. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	21	25	15	13	35	195	123	70	110	41	74
2	29	21	24	15	13	36	235	110	65	124	40	75
3	27	20	23	15	14	36	250	106	61	151	39	62
4	26	17	23	14	14	36	258	115	60	148	34	59
5	22	20	22	14	14	36	216	213	60	136	28	52
6	20	21	22	14	14	36	141	178	55	129	30	49
7	19	20	21	14	15	43	156	159	51	124	31	48
8	19	18	21	14	15	50	177	136	51	111	34	48
9	18	21	21	14	15	60	175	223	51	96	35	54
10	18	18	21	14	16	74	175	197	51	92	34	47
11	17	16	20	14	16	184	130	161	39	103	38	46
12	17	13	20	13	17	520	143	144	31	96	41	59
13	16	17	20	13	17	560	158	126	31	90	36	54
14	16	19	20	13	18	480	167	115	35	93	31	49
15	16	20	20	13	18	420	210	104	35	86	43	43
16	15	20	20	13	18	370	194	109	45	83	66	35
17	15	99	20	13	19	308	206	102	56	80	116	38
18	16	66	20	13	20	280	188	93	61	75	93	38
19	16	41	20	13	20	222	189	89	88	65	78	39
20	16	40	20	13	21	264	192	94	100	59	71	35
21	19	35	19	13	22	358	213	83	105	56	70	33
22	18	32	19	13	23	349	203	102	115	53	68	33
23	22	32	19	13	25	297	232	93	112	51	60	52
24	28	34	18	13	28	261	200	89	98	56	55	52
25	25	36	18	13	30	249	174	92	96	97	53	54
26	24	37	18	13	32	242	165	89	98	96	54	53
27	23	29	17	13	33	220	150	86	101	76	54	49
28	21	28	17	13	34	217	147	85	125	78	52	47
29	21	27	16	13	---	224	135	89	110	62	49	46
30	22	26	16	13	---	220	130	82	114	53	46	48
31	22	---	16	13	---	206	---	82	---	46	49	---
TOTAL	632	863	616	417	554	6893	5505	3668	2170	2775	1569	1475
MEAN	20.4	28.0	19.9	13.5	19.8	222	184	118	72.3	89.5	50.6	49.2
MAX	31	99	25	15	34	560	258	223	125	151	116	75
MIN	15	13	16	13	13	35	130	82	31	46	28	33
CFSM	.009	.01	.009	.006	.009	.10	.08	.05	.03	.04	.02	.02
IN.	.01	.01	.01	.01	.01	.11	.09	.06	.04	.05	.03	.02
AC-FT	1250	1710	1220	827	1100	13670	10920	7280	4300	5500	3110	2930

CAL YR 1976 TOTAL 69015 MEAN 189 MAX 2000 MIN 13 CFSM .08 IN 1.14 AC-FT 136900
WTR YR 1977 TOTAL 27137 MEAN 74.3 MAX 560 MIN 13 CFSM .03 IN .45 AC-FT 53830

DES MOINES RIVER BASIN

05479000 EAST FORK DES MOINES RIVER AT DAKOTA CITY, IA

LOCATION.--Lat 42°43'26", long 94°11'30", in NW1/4 SE1/4 sec.6, T.91 N., R.28 W., Humboldt County, Hydrologic Unit 07100003, on right bank 50 ft (15 m) upstream from old mill dam, in city park at east edge of Dakota City, 500 ft (152 m) upstream from bridge on county highway P56, 0.6 mi (1.0 km) downstream from bridge on State Highway 3, 3.4 mi (5.5 km) upstream from confluence with Des Moines River, and at mile 333.8 (537.1 km) upstream from mouth of Des Moines River.

DRAINAGE AREA.--1,308 mi² (3,387 km²).

PERIOD OF RECORD.--March 1940 to current year. Prior to October 1954, published as "near Hardy".

REVISED RECORDS.--USP 1438: Drainage area. USP 1508: 1944, 1945-47 (M).

GAGE.--Water-stage recorder. Datum of gage is 1,036.71 ft (315.599 m) above mean sea level. Prior to Oct. 1, 1954, nonrecording gage at site 8 mi (12.9 km) upstream at different datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather service gage height telemeter at station.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--37 years, 475 ft³/s (13.45 m³/s), 4.93 in/yr (125 mm/yr), 244,100 acre-ft/yr (424 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,800 ft³/s (532 m³/s) June 21, 1954, gage height, 16.95 ft (5.166 m), from floodmark, site and datum then in use; minimum daily, 4.8 ft³/s (0.14 m³/s) Jan. 11-14, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1954, reached a stage of 24.02 ft (7.321 m), discharge, 17,400 ft³/s (493 m³/s) at present site. Flood of September 1938 reached a stage of 17.4 ft (5.30 m), discharge, about 22,000 ft³/s (623 m³/s) site and datum in use during the period 1940-54.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 520 ft³/s (14.7 m³/s) May 29, gage height, 8.96 ft (2.731 m), no peak above base of 1,500 ft³/s (42.5 m³/s); maximum gage height, 9.20 ft (2.804 m) Mar. 14, backwater from ice; minimum daily discharge, 4.8 ft³/s (0.14 m³/s) Jan. 11-14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.8	16	10	5.2	7.1	34	44	41	180	21	6.2	12
2	8.1	18	10	5.0	7.6	33	59	37	101	18	6.9	13
3	6.6	17	10	5.0	8.0	34	71	35	68	19	8.0	16
4	7.4	17	9.8	4.9	9.0	35	91	39	61	17	7.6	20
5	10	17	9.7	4.9	9.7	36	81	55	38	14	7.6	16
6	9.5	18	9.6	4.9	10	37	72	60	29	13	6.8	13
7	8.2	18	9.5	4.9	11	38	66	133	24	16	6.0	17
8	9.9	17	9.6	4.9	12	43	59	172	23	16	10	16
9	11	20	9.6	4.9	13	49	50	128	21	12	11	16
10	9.8	19	9.6	4.9	13	58	45	91	18	12	11	13
11	9.3	11	9.6	4.8	14	107	42	70	17	17	9.3	12
12	9.4	17	9.6	4.8	15	162	41	57	15	18	7.4	15
13	10	22	9.6	4.8	16	189	40	48	14	15	6.3	15
14	9.8	19	9.4	4.8	16	210	39	42	13	15	5.4	12
15	11	19	9.4	4.9	17	208	41	37	11	19	19	12
16	13	19	9.2	4.9	17	192	41	35	15	15	71	9.7
17	12	17	9.0	4.9	18	145	62	33	20	15	52	8.8
18	14	14	8.8	4.9	18	110	69	66	20	14	56	9.6
19	18	13	8.4	4.9	19	85	53	75	22	12	39	11
20	17	13	8.0	4.9	20	71	61	61	19	11	27	11
21	19	13	7.9	4.9	21	61	80	52	16	13	23	9.7
22	24	13	7.7	4.9	24	93	67	45	39	11	20	9.4
23	26	13	7.6	5.0	28	48	66	39	62	9.1	18	14
24	33	13	7.3	5.2	33	44	86	37	55	13	15	19
25	28	13	7.0	5.4	35	41	75	33	44	15	14	16
26	27	13	6.7	5.5	35	38	64	30	37	10	15	15
27	22	12	6.4	5.6	35	39	56	26	31	8.9	13	18
28	22	12	6.2	5.7	34	42	52	24	33	9.6	13	17
29	20	11	5.8	5.9	---	47	47	263	29	9.8	11	15
30	19	11	5.6	6.1	---	46	43	274	25	8.3	11	14
31	18	---	5.4	6.5	---	47	---	210	---	6.9	13	---
TOTAL	468.8	465	262.1	158.8	515.4	2381	1763	2348	1090	423.6	539.5	415.2
MEAN	15.1	15.5	8.45	5.12	16.4	76.8	58.0	75.7	36.3	13.7	17.4	13.0
MAX	33	22	10	6.8	35	210	91	274	180	21	71	20
MIN	6.6	11	5.4	4.8	7.1	33	39	24	11	6.9	5.4	8.8
CFSM	.01	.01	.005	.004	.01	.06	.05	.06	.03	.01	.01	.01
IN.	.01	.01	.01	.00	.01	.07	.05	.07	.03	.01	.02	.01
AC-FT	930	922	520	315	1020	4720	3500	4660	2160	840	1070	824

CAL YR 1976 TOTAL 35239.1 MEAN 96.3 MAX 717 MIN 5.1 CFSM .07 IN 1.00 AC-FT 69900
WTR YR 1977 TOTAL 10630.3 MEAN 29.7 MAX 274 MIN 4.8 CFSM .02 IN .31 AC-FT 21480

05480000 LIZARD CREEK NEAR CLARE, IA

LOCATION.--Lat 42°32'35", long 94°20'45", in NE1/4 NE1/4 sec.11, T.89 N., R.30 W., Webster County, Hydrologic Unit 07100004, on right bank 20 ft (6 m) downstream from bridge on county highway, 2.3 mi (3.7 km) downstream from Drainage ditch 3, 3.0 mi (4.8 km) south of Clare, and 8.2 mi (13.2 km) upstream from South Lizard Creek.

DRAINAGE AREA.--257 mi² (666 km²).

PERIOD OF RECORD.--March 1940 to current year. Prior to April 1940, monthly discharge only, published in WSP 1308. Prior to October 1954, published as North Lizard Creek near Clare.

REVISED RECORDS.--WSP 1508: 1940, 1942, 1944-46 (M), 1947-48.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,079.30 ft (328.971 m) above mean sea level. Prior to May 6, 1953, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Three discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--37 years, 93.9 ft³/s (2.659 m³/s), 4.95 in/yr (126 mm/yr) 68,030 acre-ft/yr (83.9 hm³/yr); median of yearly mean discharges, 82 ft³/s (2.32 m³/s); 4.3 in/yr (109 mm/yr), 59,400 acre-ft/yr (73.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,000 ft³/s (283 m³/s) June 23, 1947, gage height, 16.0 ft (4.88 m), from floodmark, from rating curve extended above 5,300 ft³/s (150 m³/s); no flow on a few days in 1943, 1956 and 1968 and many days in 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 975 ft³/s (27.6 m³/s) May 5, gage height, 6.08 ft (1.853 m), at 1045 hours, no other peak above base of 800 ft³/s (22.7 m³/s); no flow Dec. 29 to Feb. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.18	2.9	.19	.00	.00	3.3	13	8.2	3.7	.63	.03	.52
2	.12	2.8	.15	.00	.00	3.3	21	5.9	3.7	.55	.04	.52
3	.11	2.6	.15	.00	.00	3.4	35	4.5	3.1	.40	.03	1.6
4	.15	1.7	.16	.00	.00	3.6	36	11	1.6	.41	.01	9.1
5	.17	1.4	.14	.00	.00	3.6	27	494	1.0	.36	.03	5.8
6	.14	2.0	.15	.00	.00	3.6	20	180	.63	.81	.05	4.2
7	.15	2.0	.13	.00	.00	3.5	17	90	.65	1.9	.21	9.6
8	.27	1.4	.11	.00	.00	3.9	16	53	.69	1.6	13	9.5
9	.37	1.4	.10	.00	.00	4.5	12	36	.49	.82	14	13
10	.40	1.6	.09	.00	.00	6.4	9.5	26	.38	.60	5.6	13
11	.35	1.4	.08	.00	.01	12	8.8	20	.29	.70	1.2	12
12	.42	1.3	.07	.00	.03	19	12	17	.27	1.6	.39	35
13	.47	1.5	.06	.00	.06	15	13	15	.26	1.6	.23	27
14	.52	1.9	.05	.00	1.7	11	15	13	.25	1.1	.15	17
15	.67	2.1	.05	.00	1.8	8.4	17	11	.22	7.9	4.5	21
16	.52	1.5	.05	.00	1.9	7.6	15	9.9	.46	3.8	22	15
17	.60	1.4	.05	.00	2.1	7.0	16	9.9	.78	2.0	20	11
18	.74	1.1	.05	.00	2.2	6.2	17	9.1	1.0	2.0	7.5	8.4
19	1.0	1.3	.05	.00	2.3	5.8	16	9.3	4.8	1.0	3.9	5.9
20	1.6	2.0	.03	.00	2.3	5.6	17	9.6	1.5	.47	4.3	4.6
21	1.5	1.8	.02	.00	2.4	5.4	18	23	.98	.33	2.3	2.9
22	2.9	1.1	.02	.00	2.5	5.4	17	18	1.4	.24	1.0	2.4
23	7.2	.80	.02	.00	2.6	5.6	18	20	2.7	.18	.66	6.2
24	9.1	.70	.02	.00	2.7	5.8	14	17	2.8	.35	.48	17
25	11	.84	.01	.00	2.8	6.0	13	13	2.1	.33	.53	14
26	7.3	.68	.01	.00	3.0	6.4	11	10	1.6	.20	.64	15
27	6.8	.44	.01	.00	3.1	8.0	9.8	8.8	1.1	.15	.52	13
28	5.9	.30	.01	.00	3.2	11	13	8.0	1.0	.29	.60	10
29	4.6	.25	.00	.00	---	18	11	8.0	.78	.23	.52	9.7
30	4.5	.22	.00	.00	---	18	8.5	16	.75	.14	.32	10
31	3.7	---	.00	.00	---	16	---	10	---	.07	.45	---
TOTAL	73.46	42.43	2.04	.00	36.70	242.3	486.6	1184.2	40.98	32.77	105.09	323.94
MEAN	2.37	1.41	.066	.000	1.31	7.82	16.2	38.2	1.37	1.06	3.39	10.8
MAX	11	2.9	.19	.00	3.2	19	36	494	4.8	.79	.22	35
MIN	.11	.22	.00	.00	.00	3.3	8.5	4.5	.22	.07	.01	.52
CFSM	.009	.005	.000	.000	.005	.03	.06	.15	.005	.004	.01	.04
IN.	.01	.01	.00	.00	.01	.04	.07	.17	.01	.00	.02	.05
AC-FT	146	84	4.0	.00	73	481	965	2350	81	65	208	643

CAL YR 1976 TOTAL 6761.04 MEAN 18.5 MAX 177 MIN .00 CFSM .07 IN .98 AC-FT 13410
WTR YR 1977 TOTAL 2570.51 MEAN 7.04 MAX 494 MIN .00 CFSM .03 IN .37 AC-FT 5100

DES MOINES RIVER BASIN

05480500 DES MOINES RIVER AT FORT DODGE, IA

LOCATION.--Lat 42°30'22", Long 94°12'04", in NW1/4 SW1/4 sec.19, T.89 N., R.28 W., Webster County, Hydrologic Unit 07100004, on right bank 400 ft (122 m) upstream from Soldier Creek, 1,800 ft (549 m) downstream from Illinois Central Railroad bridge in Fort Dodge, 2,000 ft (610 m) downstream from Lizard Creek, and at mile 314.6 (506.2 km).

DRAINAGE AREA.--4,190 mi² (10,852 km²).

PERIOD OF RECORD.--April 1905 to July 1906 (no winter records), October 1912 to September 1927 (published as "at Kalo"), October 1946 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1308: 1924, 1925 (N).

GAGE.--Water-stage recorder. Datum of gage is 959.38 ft (295.467 m) above mean sea level. See WSP 1728 for history of changes prior to Dec. 8, 1949.

REMARKS.--Records good except those for winter period, which are poor. Occasional minor regulation caused by dam 0.8 mi (1.3 km) upstream from gage. Several observations of water temperature were made during the year. Corps of Engineers rain gage and gage height telemeters at station.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--45 years (1913-27, 1946-77), 1,338 ft³/s (37.89 m³/s) 4.34 in/yr (110 mm/yr), 959,400 acre-ft/yr (1,200 hm³/yr); median of yearly mean discharges, 1,170 ft³/s (33.1 m³/s), 3.8 in/yr (96 mm/yr), 848,000 acre-ft/yr (1,050 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,600 ft³/s (1,010 m³/s) Apr. 8, 1965, gage height, 17.79 ft (5.422 m); maximum gage height, 19.62 ft (5.980 m), from floodmark, June 23, 1947, present site and datum; minimum daily discharge, 14 ft³/s (0.40 m³/s) Nov. 3, 1955.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,520 ft³/s (99.7 m³/s) May 4, gage height, 5.41 ft (1.649 m), no peak above base of 6,000 ft³/s (170 m³/s); minimum daily, 23 ft³/s (0.65 m³/s) Jan. 13-26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	54	46	27	28	94	266	238	382	149	84	90
2	48	53	45	26	30	99	340	228	274	141	81	111
3	48	55	44	26	31	105	359	212	208	166	48	119
4	54	53	42	25	31	112	403	491	171	176	48	105
5	51	46	42	24	32	135	381	1980	143	159	52	105
6	46	48	40	24	32	95	327	955	121	166	44	96
7	45	53	38	24	32	103	245	579	102	207	43	114
8	42	52	37	24	32	130	260	803	103	161	72	117
9	40	50	37	24	32	160	260	457	97	145	225	137
10	40	55	36	24	33	199	241	428	90	120	147	126
11	40	50	36	24	33	338	224	355	88	124	93	111
12	39	42	35	24	34	656	187	303	71	131	75	211
13	38	47	35	23	35	825	225	266	63	116	69	263
14	38	49	35	23	36	755	226	236	65	108	60	167
15	37	55	35	23	37	684	264	214	67	126	129	136
16	36	131	34	23	39	693	271	203	78	115	464	128
17	38	62	34	23	42	479	257	204	97	107	277	111
18	40	135	34	23	45	435	370	185	103	104	253	104
19	45	84	34	23	45	353	303	233	104	90	202	95
20	44	70	33	23	53	319	262	252	131	78	161	90
21	42	75	32	23	55	395	397	230	138	74	141	84
22	45	68	32	23	62	405	363	270	146	70	127	80
23	49	56	31	23	66	356	372	269	192	65	118	120
24	79	68	31	23	70	317	365	241	186	79	104	205
25	75	70	30	23	75	286	338	213	163	78	97	183
26	69	78	29	23	80	272	308	198	154	106	100	165
27	65	58	29	24	85	268	286	172	146	90	94	147
28	60	54	28	24	91	269	289	168	151	88	90	136
29	57	48	28	25	---	306	265	187	159	79	84	136
30	59	44	28	26	---	276	246	484	152	65	79	159
31	56	---	27	27	---	276	---	470	---	58	98	---
TOTAL	1512	1863	1077	744	1301	10097	8901	11424	4145	3541	3699	3938
MEAN	48.8	62.1	34.7	24.0	46.5	326	297	369	138	114	119	131
MAX	79	135	46	27	91	825	403	1980	382	207	464	263
MIN	36	42	27	23	28	94	197	168	63	58	43	80
CFSM	.01	.02	.008	.006	.01	.08	.07	.09	.03	.03	.03	.03
IN.	.01	.02	.01	.01	.01	.09	.08	.10	.04	.03	.03	.03
AC-FT	3000	3700	2140	1480	2580	20030	17660	22660	8220	7020	7340	7810

CAL VR 1976 TOTAL 128439 MEAN 351 MAX 2380 MIN 27 CFSM .08 IN 1.14 AC-FT 254800
VTR VR 1977 TOTAL 52242 MEAN 143 MAX 1980 MIN 23 CFSM .03 IN .46 AC-FT 103600

05481000 BOONE RIVER NEAR WEBSTER CITY, IA

LOCATION.--Lat 42°26'01", long 93°48'12", in NW1/4 SE1/4 sec.18, T.88 N., R.25 W., Hamilton County, Hydrologic Unit 07100006, on right bank 100 ft (30 m) upstream from bridge on State Highway 17, 1.0 mi (1.6 km) southeast of junction of U.S. Highway 20 and State Highway 17 south of Webster City, and 3.2 mi (5.1 km) downstream from Brewers Creek.

DRAINAGE AREA.--844 mi² (2,185 km²).

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1308: 1940 (N), WSP 1708: 1956.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 989.57 ft (301.621 m) above mean sea level. Prior to June 26, 1940, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers rain gage and gage height telemeters at station.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--37 years, 371 ft³/s (10.51 m³/s), 5.97 in/yr (152 mm/yr), 268,800 acre-ft/yr (331 hm³/yr); median of yearly mean discharges, 280 ft³/s (7.93 m³/s), 4.5 in/yr (114 mm/yr), 203,000 acre-ft/yr (250 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,300 ft³/s (575 m³/s) June 22, 1954, gage height, 18.55 ft (5.654 m); no flow Feb. 7, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1896, 19.1 ft (5.82 m) about June 10, 1918, from flood-marks, from information by local resident, discharge, 21,500 ft³/s (609 m³/s). Flood of June 10, 1932, reached a stage of 16.0 ft (4.88 m), discharge, 15,000 ft³/s (425 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,760 ft³/s (49.8 m³/s) Aug. 16, gage height, 5.45 ft (1.664 m), no peak above base of 2,200 ft³/s (62.3 m³/s); no flow Feb. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.2	14	9.0	.95	.02	28	44	31	40	4.5	2.8	67
2	5.9	14	8.8	.90	.02	29	59	29	38	3.7	2.8	44
3	4.9	12	8.4	.82	.02	32	60	27	32	3.4	2.7	43
4	5.2	14	8.1	.74	.01	35	74	34	26	3.1	2.8	89
5	5.5	14	7.8	.70	.01	37	78	859	20	3.2	12	74
6	5.0	13	7.4	.62	.01	41	66	708	15	7.8	12	63
7	5.8	16	7.3	.56	.00	44	55	338	12	39	9.1	65
8	6.4	16	7.1	.62	.02	48	45	221	13	33	97	76
9	4.6	19	6.9	.47	.02	50	36	134	12	13	121	79
10	5.0	15	6.7	.43	.03	54	33	91	10	8.6	72	62
11	6.9	13	6.4	.39	.05	59	30	68	10	7.5	55	48
12	6.2	11	6.1	.35	.07	52	27	54	9.2	6.0	42	171
13	5.7	10	5.9	.33	.10	64	26	45	7.9	5.5	31	204
14	6.9	9.7	5.4	.31	.15	62	29	38	7.4	4.6	21	131
15	4.9	10	5.0	.27	.22	58	27	38	8.0	4.7	76	88
16	3.6	11	4.8	.24	.35	55	26	32	9.0	4.5	1030	64
17	4.6	11	4.0	.21	.60	52	27	26	22	7.7	338	57
18	5.2	13	3.5	.18	1.3	48	29	28	26	7.9	185	50
19	9.0	11	3.3	.16	2.5	45	50	347	16	7.2	151	42
20	7.6	11	3.0	.14	5.0	44	78	107	11	10	118	36
21	8.1	11	2.7	.12	5.8	41	75	64	9.0	30	87	31
22	11	11	2.3	.10	9.0	37	130	56	8.3	9.5	65	28
23	14	11	2.2	.09	11	33	112	44	8.9	5.8	52	60
24	19	10	1.9	.08	13	30	75	38	9.4	5.3	34	212
25	20	11	1.8	.07	15	30	57	33	9.5	4.3	28	204
26	25	11	1.6	.06	17	27	47	25	9.0	4.0	43	139
27	17	12	1.5	.05	21	29	42	27	7.4	5.7	39	98
28	14	11	1.4	.04	24	34	42	31	7.2	6.8	62	76
29	12	10	1.2	.04	---	45	38	24	8.9	4.9	47	68
30	12	9.4	1.1	.03	---	48	33	21	5.1	3.8	34	102
31	11	---	1.0	.03	---	48	---	20	---	3.6	81	---
TOTAL	282.3	355.1	143.3	10.01	127.30	1349	1863	3641	424.2	268.6	2953.2	2571
MEAN	9.11	12.2	4.62	.32	4.55	43.5	51.8	117	14.1	8.66	95.3	85.7
MAX	25	19	9.0	.96	24	64	130	859	40	39	1030	212
MIN	3.6	9.4	1.0	.03	.00	26	25	20	5.1	3.1	2.7	28
CFSM	.01	.01	.005	.000	.005	.05	.05	.14	.02	.01	.11	.10
IN.	.01	.02	.01	.00	.01	.06	.07	.16	.02	.01	.13	.11
AC-FT	560	724	284	20	252	2680	3080	7220	841	533	5860	5100

CAL YR 1976 TOTAL 62232.00 MEAN 170 MAX 1730 MIN 1.0 CFSM .20 IN 2.74 AC-FT 123400
 VTR YR 1977 TOTAL 12688.01 MEAN 37.5 MAX 1030 MIN .0 CFSM .04 IN .60 AC-FT 27180

05481300 DES MOINES RIVER NEAR STRATFORD, IA

LOCATION.--Lat 42°15'04", long 93°59'52", in NW1/4 NE1/4 sec.21, T.9S N., R.27 W., Webster County, Hydrologic Unit 07100004, on right bank 6 ft (2 m) downstream from bridge on State Highway 178, 0.1 mi (0.2 km) downstream from Skillet Creek, 4.0 mi (6.4 km) southwest of Stratford, 7.3 mi (11.7 km) downstream from Boone River and at mile 276.7 (448.2 km).

DRAINAGE AREA.--5,452 mi² (14,120 km²).

PERIOD OF RECORD.--April 1920 to current year in reports of Geological Survey. Published as "near Boone" 1920-67. Monthly discharge only for some periods, published in WSP 1308. December 1904 to April 1920 (fragmentary gage heights during high-water periods only) in reports of U.S. Weather Bureau.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1925-27, 1934. WSP 1708: 1955.

GAGE.--Water-stage recorder. Datum of gage is 894.08 ft (272.491 m) above mean sea level. Prior to May 1, 1920, nonrecording gage 16.6 mi (26.7 km) downstream at datum 23.49 ft (7.16 m) lower. Oct. 9, 1924, to Jan. 19, 1933, nonrecording gage 17.6 mi (28.3 km) downstream at datum 28.53 ft (8.75 m) lower. Jan. 11, 1933, to Sept. 30, 1934, nonrecording gage 17.9 mi (28.8 km) downstream at datum 22.28 ft (6.78 m) lower. Oct. 1, 1934 to Feb. 6, 1935, nonrecording gage and Feb. 7, 1935 to Sept. 30, 1967, water-stage recorder 17.9 mi (28.8 km) downstream at datum 21.84 ft (6.66 m) lower.

REMARKS.--Records good except those for winter period, which are poor. Occasional minor regulation caused by dam at Fort Dodge. Several observations of water temperature were made during the year. Corps of Engineers rain gage and gage height telemeters at station.

COOPERATION.--Eight discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--57 years, 1,734 ft³/s (49.11 m³/s), 4.32 in/yr (110 mm/yr), 1,256,000 acre-ft/yr (1,550 hm³/yr); median of yearly mean discharges, 1,470 ft³/s (41.6 m³/s), 3.7 in/yr (94 mm/yr), 1,065,000 acre-ft/yr (1,310 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,400 ft³/s (1,630 m³/s) June 22, 1954, gage height, 25.35 ft (7.727 m), from graph based on hourly gage readings, site and datum then in use; no flow for a short time on Jan. 9, 25, 1928, caused by manipulation of gates in control dam, site then in use; minimum unregulated daily discharge, 13 ft³/s (0.37 m³/s) Jan. 23, 24, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 30, 1903, reached a stage of 25.4 ft (7.74 m), from high-water mark, site and datum then in use, discharge, 43,600 ft³/s (1,230 m³/s). Flood of June 22, 1954, reached a stage of 29.7 ft (9.05 m), from floodmark, present site and datum, discharge, 54,200 ft³/s (1,530 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,240 ft³/s (120 m³/s) May 5, gage height, 9.02 ft (2.749 m); no peak above base of 7,000 ft³/s (198.2 m³/s); maximum gage height, 9.28 ft (2.828 m) Aug 16; minimum daily discharge, 13 ft³/s (0.37 m³/s) Jan. 23, 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	95	65	23	18	190	356	258	480	173	66	376
2	63	95	65	22	19	216	387	240	441	170	57	269
3	63	95	63	22	20	234	501	223	352	162	53	240
4	59	88	61	21	21	260	508	228	275	166	47	296
5	66	78	60	21	24	300	540	1350	225	187	58	361
6	79	65	58	21	25	350	510	3600	184	187	84	264
7	66	65	67	20	30	370	445	1810	161	318	74	256
8	56	68	56	20	32	350	382	1130	146	334	1330	316
9	45	80	54	21	30	270	245	837	135	232	1590	419
10	49	82	53	21	28	330	332	695	130	187	1050	408
11	43	65	52	21	26	515	300	603	115	152	594	312
12	42	105	48	22	25	750	279	497	103	165	372	519
13	45	138	44	22	27	958	243	419	95	161	268	1230
14	42	140	44	22	30	1050	272	361	76	142	215	873
15	41	152	43	21	33	951	270	314	69	136	208	563
16	40	160	42	20	38	852	297	287	72	168	3560	413
17	42	170	44	20	43	746	312	253	100	141	2150	347
18	45	145	46	19	49	637	290	251	119	143	1130	315
19	43	115	43	19	57	572	400	345	131	124	793	256
20	55	105	41	18	66	489	381	505	114	112	639	222
21	63	102	37	16	76	438	478	370	129	151	519	199
22	65	94	35	15	85	502	507	310	147	149	400	179
23	68	84	34	13	92	503	520	315	188	118	334	225
24	100	80	34	13	117	445	472	315	211	103	292	620
25	115	76	32	14	130	403	433	282	217	110	247	848
26	121	74	30	14	144	384	393	259	190	108	242	553
27	136	73	29	15	150	341	351	227	175	104	284	499
28	124	71	28	15	170	344	328	214	170	136	244	397
29	110	69	27	15	---	385	321	208	173	114	249	358
30	102	67	25	16	---	390	287	200	184	107	211	364
31	90	---	24	17	---	359	---	460	---	81	296	---
TOTAL	2152	2888	1375	579	1615	14874	11410	17376	8308	4842	17536	12526
MEAN	69.4	95.3	44.4	18.7	57.7	480	380	561	177	155	569	418
MAX	136	170	66	23	170	1050	540	3600	480	334	3560	1230
MIN	40	55	24	13	18	190	243	200	69	81	47	179
CFSM	.01	.02	.008	.003	.01	.09	.07	.10	.03	.03	.10	.08
IN.	.01	.02	.01	.00	.01	.10	.08	.12	.04	.03	.12	.09
AC-FT	4270	5730	2730	1150	3210	29500	22630	34470	10530	9600	34980	24840

CAL YR 1976 TOTAL 242349 MEAN 652 MAX 5590 MIN 24 CFSM .12 IN 1.65 AC-FT 480700
WTR YR 1977 TOTAL 92581 MEAN 294 MAX 3600 MIN 13 CFSM .05 IN .63 AC-FT 183600

05401630 SAYLORVILLE LAKE NEAR SAYLORVILLE, IA

LOCATION.--Lat 41°42'13", long 93°41'21", in SE 1/4, SW 1/4 Sec. 30, T.20 N., R.24 W., Polk County, Hydrologic Unit 07100004, in control tower of Saylorville Dam, 3.2 mi (5.1 km) northwest of Saylorville, 4.2 mi (6.8 km) upstream from Beaver Creek, and at mile 213.4 (343.4 km).

DRAINAGE AREA.--9,823 mi² (25,382 km²).

PERIOD OF RECORD.--April 1977 to Sept. 30, 1977.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level (levels by Corps of Engineers.)

REMARKS.--Reservoir is formed by earthfill dam completed in 1976. Storage began in April 1977. Release controlled at intake structure to forechamber of 22 ft (6.7 m) diameter concrete conduit through dam. Ungated chute spillway 430 ft (131 m) in length at right end of dam at elevation 884 ft (269 m), contents 578,000 acre-ft (703 hm³). Conservation pool at elevation 833 ft (254 m), contents, 74,000 acre-ft (91 hm³), surface area, 5,499 acres (2,185 hm²). Flood pool elevation at 890 ft (271 m), contents, 676,000 acre-ft (834 hm³), surface area, 18,700 acres (7,598 hm²). Reservoir is used for flood control, low-flow augmentation, conservation and recreation.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 76,900 acre-ft (94.6 hm³) Sept. 24, 1977, elevation, 833.58 ft (254.075 m).

EXTREMES FOR CURRENT YEAR.--Maximum daily contents during period April to September, 76,900 acre-ft (94.6 hm³) Sept. 24, elevation, 833.58 ft (254.075 m). Pool reached conservation elevation on Sept. 9 since closure Apr. 12.

Capacity table (elevation, in feet, and contents, in acre-feet)

805	380	833	74,000	884	570,000
810	2,300	840	116,000	890	876,000
815	7,700	850	190,000	900	938,000
820	19,000	860	278,000	910	1,320,000
830	58,600	880	511,000	915	1,530,000

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1							---	5960	26300	26400	28600	68900
2							---	6040	26700	26400	28600	69700
3							---	6120	27000	26700	28600	70800
4							---	6220	27300	26700	28500	71600
5							---	6440	27400	26900	28900	72000
6							---	7620	27300	27000	28900	72500
7							---	13600	27200	27200	28800	73000
8							---	16300	27100	27400	29700	73700
9							---	17800	27000	27700	32100	74500
10							---	18900	26800	28000	34600	75000
11							---	19800	26600	28100	36200	75400
12							410	20600	26400	28100	37200	75600
13							660	21100	26200	28200	38000	75200
14							900	21600	26000	28200	38300	75400
15							1080	21900	25700	28100	39600	75600
16							1240	22100	25500	28500	43500	75300
17							1400	22400	25200	28600	50000	75100
18							1580	22600	25200	28700	53600	74900
19							1780	22900	25100	28700	55900	74800
20							2040	23100	25000	28700	57300	74600
21							2500	23600	25100	28700	59100	74800
22							3000	24100	25100	28600	60200	75000
23							3440	24500	25300	28700	60800	75500
24							3860	24900	25800	28800	61200	76900
25							4240	25200	25700	28700	61700	76400
26							4600	25400	26100	28600	62400	76800
27							4900	25600	26200	28500	65100	76600
28							5380	25800	26300	28500	66000	76100
29							5820	25900	26300	28600	66800	75700
30							5780	26000	26500	28700	67300	76000
31							---	26000	---	28600	68600	---
MAX							---	26000	27400	28800	68600	76900
MIN							---	5960	25000	26400	28500	68900

DES MOINES RIVER BASIN

05481680 DES MOINES RIVER NEAR SAYLORVILLE, IA

LOCATION.--Lat 41°40'50", long 93°40'07", near center of sec. 5, T. 79 N., R. 24 W., Polk County, Hydrologic Unit 07100004, near center of span on downstream side of bridge on county highway F42, 2.0 mi (3.2 km) west of Saylorville, 2.1 mi (3.4 km) downstream from Rock Creek, 2.4 mi (3.9 km) upstream from Beaver Creek, and at mile 211.6 (340.6 km).

DRAINAGE AREA.--5,841 mi² (15,128 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 787.42 ft (240.006 m) above mean sea level (levels by Corps of Engineers). Prior to Aug. 6, 1970, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year. Flow regulated by Saylorville Lake (Station 05481630) 2.1 mi (3.4 km) upstream since Apr. 12, 1977. Corps of Engineers gage height telemeter at station.

COOPERATION.--Thirty-one discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--16 years, 2,398 ft³/s (67.91 m³/s), 5.58 in/yr (142 mm/yr), 1,737,000 acre-ft/yr (2,140 hm³/yr); median of yearly mean discharges, 2,050 ft³/s (58.1 m³/s) 4.6 in/yr (122 mm/yr), 1,485,000 acre-ft/yr (1,830 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,400 ft³/s (1,340 m³/s) Apr. 10, 1965, gage height, 24.02 ft (7.321 m); minimum daily, 13 ft³/s (0.37 m³/s) Jan. 25, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1893, 24.5 ft (7.47 m), present gage datum, June 24, 1954, from floodmarks, discharge, 80,000 ft³/s (1,700 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,070 ft³/s (30.3 m³/s) Sept. 14, gage height, 6.67 ft (2.033 m), no peak above base of 8,000 ft³/s (226 m³/s); minimum daily, 13 ft³/s (0.37 m³/s) Jan. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	133	68	25	15	200	435	216	205	100	90	93
2	75	123	66	26	15	210	455	216	203	100	90	87
3	73	119	65	26	16	220	448	219	205	100	87	123
4	75	112	64	25	19	230	483	217	189	100	90	101
5	79	107	62	26	19	240	530	210	178	100	94	88
6	82	110	64	24	22	260	531	207	185	100	96	87
7	73	104	66	23	27	290	533	202	186	100	97	110
8	66	90	69	23	30	330	492	208	190	100	97	123
9	77	120	67	23	30	360	455	210	190	100	88	221
10	73	105	65	22	30	397	396	211	198	100	86	239
11	68	86	63	22	30	432	377	215	198	100	84	210
12	64	67	62	22	30	585	285	215	195	100	88	280
13	64	72	60	23	30	593	201	219	193	100	86	748
14	60	81	58	22	30	765	195	215	209	100	82	967
15	62	71	56	22	31	937	215	215	201	100	83	796
16	62	75	54	22	31	917	217	203	200	100	128	793
17	64	104	50	21	33	851	217	177	200	100	76	810
18	68	121	47	21	47	778	202	176	100	100	76	756
19	71	150	44	21	59	682	197	175	100	100	76	335
20	73	187	42	20	61	609	208	172	100	100	73	299
21	77	180	39	18	65	563	207	182	100	100	91	220
22	77	193	37	17	74	499	210	185	100	100	77	222
23	75	145	35	15	94	472	215	184	100	100	75	228
24	82	107	33	14	100	508	217	175	100	100	74	330
25	84	102	32	13	110	504	221	154	100	100	75	408
26	84	100	30	14	130	471	225	173	100	100	80	536
27	98	82	29	15	150	462	231	197	100	100	87	748
28	131	79	27	15	170	458	213	202	100	94	292	742
29	142	81	26	15	---	469	206	206	100	92	108	738
30	145	70	25	15	---	433	210	209	100	94	88	547
31	145	---	24	15	---	435	---	207	---	89	116	---
TOTAL	2546	3276	1529	622	1497	15129	9228	6172	4626	3069	2930	11985
MEAN	82.1	109	49.3	20.1	53.5	468	308	199	154	99.0	94.5	400
MAX	146	193	69	26	170	937	533	219	209	100	292	967
MIN	60	67	24	13	15	200	195	154	100	89	73	87
CFSM	-.01	-.02	-.008	-.003	-.009	-.08	-.05	-.03	-.03	-.02	-.02	-.07
IN.	.02	.02	.01	.00	.01	.10	.06	.04	.03	.02	.02	.05
AC-FT	5050	6500	3030	1230	2970	30010	18300	12240	9170	5090	5810	23770

CAL YR 1976 TOTAL 293982 MEAN 803 MAX 4780 MIN 24 CFSM .14 IN 1.87 AC-FT 583100
WTR YR 1977 TOTAL 62608 MEAN 172 MAX 967 MIN 13 CFSM .03 IN .46 AC-FT 124200

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: October 1981 to current year.

REMARKS:--Records of specific conductance are obtained from suspended-sediment samples at time of analysis. During periods of ice effect, sediment samples are collected in open water channel.

EXTREMES FOR CURRENT YEAR: Maximum daily mean, 233 mg/L Aug. 28; minimum daily mean, 12 mg/L Feb. 28.
SEDIMENT CONCENTRATIONS: Maximum daily, 552 tons (501 tonnes) Mar. 16; minimum daily, 2.3 tons (2.1 tonnes) Dec. 27.
SEDIMENT LOADS:

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

UNICEF DAILY												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	580	---	---	---	---	---	520	---	---	---	630	---
2	---	800	740	1100	1150	650	---	720	---	850	620	---
3	660	590	---	---	---	---	600	720	640	---	---	---
4	---	560	900	1200	1150	540	---	880	570	---	610	---
5	725	580	---	---	---	---	600	---	850	700	---	---
6	---	600	900	---	1150	---	---	500	660	---	---	---
7	565	---	---	1180	1200	480	600	---	590	---	---	---
8	---	590	800	---	1150	---	---	520	660	---	750	---
9	550	---	---	1300	---	680	650	520	680	---	---	---
10	---	720	---	---	1200	---	---	520	---	---	---	---
11	560	590	---	1250	---	510	700	---	440	---	---	---
12	560	600	---	---	1150	---	---	---	450	---	640	---
13	---	---	---	---	---	---	700	570	---	---	---	---
14	550	520	800	1250	1200	---	700	---	---	740	700	---
15	---	---	1080	---	1180	510	---	560	680	---	790	---
16	710	600	850	1350	1150	---	700	---	---	730	750	---
17	---	---	800	---	1150	480	---	560	---	---	740	---
18	630	630	800	---	1400	---	750	---	---	700	740	---
19	---	---	830	1180	1150	540	---	560	---	---	---	---
20	750	800	1120	---	1000	---	770	---	---	710	700	---
21	---	---	1120	---	1200	500	790	---	670	---	700	---
22	---	690	850	1300	1150	500	---	---	690	---	690	---
23	---	---	---	---	---	820	710	---	510	710	---	---
24	---	620	---	---	---	550	---	570	---	620	---	---
25	---	---	---	---	---	650	710	---	700	---	650	---
26	---	620	---	1280	700	625	700	---	---	720	690	---
27	---	---	---	---	---	---	660	---	---	---	680	640
28	---	1100	---	---	675	600	660	625	---	730	---	---
29	---	---	---	---	---	670	660	---	---	---	---	---
30	---	760	---	---	---	---	720	---	700	640	530	---
31	620	---	---	1200	---	---	---	---	---	---	570	---

DES MOINES RIVER BASIN
05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.0	---	---	---	---	---	11.0	---	---	---	28.0	---
2	---	8.5	0.0	0.0	0.0	0.0	---	18.0	---	26.0	28.0	---
3	16.0	4.5	---	---	---	---	10.5	19.0	25.0	---	---	---
4	---	8.0	0.0	0.0	0.0	0.0	---	19.0	25.0	---	28.0	---
5	14.0	5.0	---	---	---	---	10.0	---	25.5	27.0	---	---
6	---	6.5	0.0	---	0.0	---	---	19.0	25.5	---	---	---
7	14.0	---	---	0.0	0.0	0.0	10.0	---	24.0	---	---	---
8	---	4.5	2.0	---	0.0	---	---	18.5	24.0	---	27.0	---
9	15.0	---	---	0.0	---	3.0	11.0	18.0	23.0	---	---	---
10	---	3.0	---	---	0.0	---	13.0	18.0	---	---	---	---
11	16.0	1.0	---	0.0	---	0.5	---	---	23.0	---	---	---
12	---	0.0	---	---	0.0	---	---	---	24.0	---	24.0	---
13	16.0	---	---	---	---	---	18.0	19.5	---	---	---	---
14	15.0	0.0	0.0	0.0	0.0	---	19.0	---	---	31.0	23.0	---
15	---	---	0.0	---	0.0	4.5	---	20.0	24.0	---	23.0	---
16	9.0	4.0	0.0	0.0	0.0	---	20.0	---	---	30.0	23.0	---
17	---	---	0.0	---	0.0	2.0	---	20.0	---	---	24.0	---
18	6.0	5.0	0.0	---	0.0	---	20.0	---	---	31.0	24.0	---
19	---	---	0.0	0.0	0.0	3.0	---	20.0	---	---	---	---
20	7.0	4.0	0.0	---	0.0	---	21.0	20.0	---	30.0	25.0	---
21	---	---	0.0	---	0.0	4.0	20.0	---	24.0	---	27.0	---
22	---	3.0	0.0	0.0	0.0	5.0	---	---	24.0	---	---	---
23	---	---	---	---	---	7.0	19.0	---	24.0	31.0	26.0	---
24	---	3.0	---	---	---	10.0	---	26.0	---	31.0	---	---
25	---	---	---	---	---	10.0	17.0	---	25.0	---	25.0	---
26	---	3.0	---	0.0	0.0	10.0	18.5	---	---	31.0	25.0	---
27	---	---	---	---	---	---	17.0	---	---	---	24.0	20.5
28	---	2.0	---	---	0.0	11.5	17.0	20.0	---	30.0	---	---
29	---	---	---	---	---	11.5	16.5	---	---	---	---	---
30	---	0.0	---	---	---	---	17.0	---	25.0	29.0	24.0	---
31	8.0	---	---	0.0	---	---	---	---	---	---	24.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
1	42	8.7	56	20	39	7.2	93	6.3	159	6.4	15	8.1
2	40	8.1	70	23	37	6.6	91	6.1	163	6.6	20	11
3	44	8.7	37	12	34	6.0	77	5.2	160	7.3	20	12
4	50	10	22	6.7	31	5.4	62	4.2	154	7.9	20	12
5	53	11	20	5.8	30	5.0	54	3.6	153	7.8	20	13
6	53	12	24	7.1	26	4.8	53	3.4	151	9.0	20	14
7	58	11	29	8.1	27	4.8	53	3.3	137	10	57	45
8	68	12	44	11	27	5.0	54	3.4	138	11	78	69
9	75	16	69	22	29	5.2	172	11	126	10	76	68
10	75	15	32	9.1	30	5.3	165	9.8	118	9.6	53	57
11	58	11	30	7.0	31	5.3	143	8.5	130	11	82	96
12	55	9.5	75	14	34	5.7	152	9.0	141	11	143	214
13	61	11	82	16	51	8.3	167	12	115	9.3	167	251
14	46	7.5	30	6.6	106	17	182	11	84	6.8	198	409
15	34	5.7	16	3.1	54	8.2	171	10	83	6.9	202	511
16	30	5.0	28	5.7	28	4.1	171	10	87	7.3	223	552
17	30	5.2	61	17	39	5.3	140	7.9	93	7.4	95	218
18	34	6.2	57	19	76	9.6	100	5.7	30	3.8	80	160
19	40	7.7	57	23	54	6.4	62	3.5	21	3.3	77	142
20	44	8.7	37	19	37	4.2	64	3.5	23	3.8	76	125
21	44	9.1	40	19	42	4.4	139	6.8	17	3.0	75	114
22	44	9.1	49	26	42	4.2	198	9.1	18	3.0	53	71
23	42	8.5	50	20	39	3.7	213	6.6	15	3.8	65	93
24	41	9.1	48	14	37	3.3	191	7.2	17	4.6	98	134
25	43	9.8	48	13	35	3.0	139	4.9	20	5.9	110	150
26	45	10	46	12	33	2.7	156	5.9	22	7.7	116	150
27	55	15	45	10	30	2.3	104	7.5	17	6.9	140	175
28	73	26	45	9.6	34	2.5	192	7.8	12	6.5	207	256
29	93	26	42	9.2	67	4.7	105	7.5	---	---	188	238
30	104	41	41	7.7	85	5.7	173	7.0	---	---	119	138
31	84	33	---	---	89	5.8	161	6.5	---	---	123	144
TOTAL	---	396.6	---	395.7	---	171.7	---	216.2	---	196.6	---	4648.1

DES MOINES RIVER BASIN

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09481680 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER			
1	140	164	30	17	56	31	39	11	19	4.6	135	34	135	34
2	118	145	32	19	56	31	40	11	38	9.2	119	26	119	26
3	112	135	30	18	51	28	45	12	45	11	160	53	160	53
4	114	149	34	20	45	23	30	10	52	13	155	42	155	42
5	129	185	43	24	34	16	16	4.9	54	14	124	29	124	29
6	119	171	67	37	27	13	15	4.1	52	13	105	25	105	25
7	115	165	74	40	46	23	14	3.8	44	12	102	30	102	30
8	108	140	79	44	68	36	15	4.1	32	8.4	94	31	94	31
9	101	124	75	43	28	14	15	4.1	26	6.7	124	24	124	24
10	78	83	85	48	22	12	15	4.1	32	7.4	91	59	91	59
11	38	39	70	41	21	11	16	4.3	42	9.0	82	46	82	46
12	28	22	49	28	34	18	17	4.6	63	15	115	87	115	87
13	38	21	27	16	48	25	24	6.5	51	12	145	293	145	293
14	53	28	28	16	29	16	25	6.8	39	8.6	140	266	140	266
15	52	30	41	24	20	11	30	8.1	62	14	122	264	122	264
16	43	25	49	27	17	9.2	46	12	69	24	117	251	117	251
17	48	28	47	22	17	9.2	45	12	35	8.0	112	245	112	245
18	55	30	43	20	17	4.6	32	6.6	55	11	105	214	105	214
19	47	25	38	18	17	4.6	51	8.4	73	15	97	88	97	88
20	45	25	47	22	16	4.3	65	15	81	16	88	71	88	71
21	57	32	72	35	14	3.8	66	18	140	34	79	47	79	47
22	49	28	72	36	33	8.9	64	17	78	16	71	43	71	43
23	31	18	63	31	31	8.4	53	14	40	8.1	62	38	62	38
24	27	16	59	28	24	6.5	36	5.7	30	6.0	72	64	72	64
25	28	17	42	17	19	5.1	25	7.8	47	9.5	86	95	86	95
26	49	30	36	17	16	4.3	39	11	56	12	84	122	84	122
27	67	42	34	16	22	6.9	42	11	49	12	114	230	114	230
28	60	35	29	16	37	10	28	7.1	233	104	107	214	107	214
29	64	36	28	16	44	12	26	6.6	136	40	103	145	103	145
30	42	24	55	31	42	11	35	8.9	116	20	96	145	96	145
31	---	---	60	34	---	---	35	8.4	169	63	---	---	---	---
TOTAL	---	2015	---	823	---	414.6	---	274.8	---	636.2	---	3531	---	3531

TOTAL LOAD FOR YEAR: 13718.8 TONS.

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	NUMBER OF SAM- PLING POINTS (00063)	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)
MAY	24...	1545	26.0	4	290	6	12	22	61	89	97	100

DES MOINES RIVER BASIN

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS) (00061)	TOTAL CAL- CIUM (CA) (MG/L) (00916)	TOTAL MAG- NE- SIUM (MG) (MG/L) (00927)	TOTAL SODIUM (NA) (MG/L) (00929)	TOTAL PO- TAS- SIUM (K) (MG/L) (00937)	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	ALKA- LINIT- AS CACO3 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00946)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)
OCT 27...	1025	95	--	35	55	4.1	256	--	210	120	73
NOV 30...	1030	E40	83	45	57	5.0	100	--	82	160	83
DEC 29...	1160	E60	97	41	70	4.9	467	0	383	180	110
JAN 26...	0800	E20	150	55	95	7.0	507	0	498	180	120
MAR 01...	0840	E175	68	26	54	6.2	266	--	218	90	51
29...	0800	465	71	23	28	5.2	214	--	180	110	41
APR 26...	1230	225	40	30	35	5.4	170	0	140	130	53
MAY 24...	1230	250	56	23	23	5.6	180	0	150	87	35
AUG 02...	1430	90	62	29	42	7.0	230	0	190	92	56
23...	1800	75	61	29	43	5.9	230	--	190	90	52
SEP 27...	1600	748	47	22	27	5.8	190	0	160	66	37

DATE	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL AMMONIA NITRO- GEN (N) (MG/L) (00610)	TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	TOTAL NITRO- GEN (N) (MG/L) (00600)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)
OCT 27...	.00	.03	1.3	1.3	1.3	5.8	.20	547	.74	140
NOV 30...	.06	.25	3.2	3.4	3.8	15	.46	644	.88	--
DEC 29...	1.2	1.2	2.2	3.4	4.6	20	.70	829	1.13	--
JAN 26...	.70	3.5	1.2	4.7	5.4	24	.61	956	1.31	--
MAR 01...	1.0	5.1	3.6	8.7	9.7	43	1.8	364	.50	--
29...	1.3	.19	2.0	2.2	3.5	16	.38	428	.58	537
APR 26...	.00	.15	1.7	1.8	1.8	8.0	.24	414	.56	252
MAY 24...	.72	.49	1.4	1.9	2.6	12	.33	353	.48	238
AUG 02...	.04	.05	.95	1.0	1.0	4.6	.24	426	.58	104
23...	.16	.09	.58	.67	.83	3.7	.21	415	.56	84.0
SEP 27...	.06	.02	--	--	--	--	.21	335	.48	677

DES MOINES RIVER BASIN
05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued
WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL RESI- DUE (MG/L) (00500)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	DIS- SOLVED OXYGEN (MG/L) (00300)	PER- CENT SATUR- ATION (00301)	CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340)	CARBON DIOXIDE (CO2) (MG/L) (00405)	FECAL COLI- FORM (7UM-MF COL./ 100 ML) (31625)
OCT 27...	545	820	8.7	4.5	7.0	12.0	90	26	.8	--
NOV 30...	695	960	8.6	.0	10	19.7	137	30	.4	0
DEC 29...	838	1400	8.3	.0	6.0	--	--	20	3.7	--
JAN 26...	985	1400	7.2	.0	8.0	12.2	86	21	61	1600
MAR 01...	462	910	--	.0	9.0	16.5	114	39	--	0
29...	562	660	8.7	10.5	30	9.0	88	60	.7	1200
APR 26...	470	740	8.5	20.0	4.0	--	--	34	.9	270
MAY 24...	397	480	8.4	26.0	18	--	--	38	1.1	580
AUG 02...	467	--	7.7	27.0	23	--	--	31	7.3	180
23...	474	700	--	26.5	22	10.6	--	50	--	140
SEP 27...	357	540	7.8	20.5	12	--	--	27	4.8	490

DES MOINES RIVER BASIN

05481980 BEAVER CREEK NEAR GRIMES, IA

LOCATION.--Lat 41°41'18", long 93°44'08", in SW1/4 SW1/4 sec.35, T.85 N., R.25 W., Polk County, Hydrologic Unit 07100004, on right bank 8 ft (2 m) upstream from bridge on Northwest 70th Avenue, 9.5 mi (15.3 km) downstream from Little Beaver Creek, 2.5 mi (4.0 km) east of Grimes and 6 mi (9.7 km) upstream from mouth.

DRAINAGE AREA.--358 mi² (927 km²).

PERIOD OF RECORD.--April 1960 to current year.

GAGE.--Water-stage recorder and concrete and steel sheeting broad-crested control. Datum of gage is 806.98 ft (245.98 m) above mean sea level. Prior to Aug. 31, 1966, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--17 years, 193 ft³/s (5.466 m³/s), 7.32 in/yr (186 mm/yr), 139,800 acre-ft/yr (172 hm³/yr); median of yearly mean discharges, 160 ft³/s (4.50 m³/s) 6.1 in/yr (155 mm/yr), 116,000 acre-ft/yr (143 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,340 ft³/s (208 m³/s) May 19, 1974, gage height, 14.89 ft (4.478 m); no flow for several days in 1970 and 1971; many days in 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 852 ft³/s (24.1 m³/s) Aug. 28, gage height, 7.81 ft (2.380 m), no peak above base of 1,500 ft³/s (42.5 m³/s); no flow for many days.

REVISIONS.--The peak discharge of Oct. 12, 1973 (1545 hours) has been revised to 2,950 ft³/s (83.5 m³/s), gage height, 11.79 ft (3.594 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.41	2.7	1.2	.05	.00	2.5	28	2.9	1.7	.04	.00	232
2	.22	1.0	1.0	.02	.00	3.2	37	2.8	1.0	.00	.00	219
3	.22	1.0	.89	.00	.00	4.2	31	2.8	.70	.04	.00	259
4	4.6	1.1	.70	.00	.00	5.0	61	3.1	.60	.00	.00	420
5	2.4	2.0	.60	.00	.00	6.6	57	5.1	.80	.00	.04	287
6	.62	2.7	.84	.00	.00	8.2	31	25	.28	.12	.00	179
7	.22	1.1	.50	.00	.00	10	24	58	.20	1.0	.00	141
8	.51	1.9	.50	.00	.01	13	18	22	.28	.16	.00	123
9	.51	3.7	.50	.00	.02	16	15	11	.20	.00	.00	212
10	.31	1.9	.50	.00	.02	20	12	7.8	.08	.00	.74	232
11	.41	1.1	.50	.00	.03	62	8.8	5.0	.12	.04	107	185
12	.31	.84	.50	.00	.04	62	7.8	4.6	.12	.00	.74	122
13	.22	1.6	.50	.00	.08	45	7.8	3.4	.16	.00	.41	107
14	1.2	2.7	.52	.00	.07	26	7.8	2.6	.12	.00	.25	91
15	.41	3.7	.50	.00	.10	18	6.7	2.3	.04	.00	.16	79
16	.41	4.3	.80	.00	.13	13	6.0	2.3	.00	.12	131	68
17	.51	6.0	1.0	.00	.18	18	6.0	2.1	.08	3.4	474	70
18	.73	5.7	1.5	.00	.21	20	5.1	1.7	.00	2.1	447	76
19	.73	4.6	1.7	.00	.25	18	6.3	2.9	.00	.40	191	62
20	.31	4.3	1.4	.00	.32	17	7.0	2.6	.00	.08	129	53
21	.14	4.6	1.3	.00	.40	21	11	2.6	.00	.04	134	46
22	.00	4.3	1.1	.00	.50	16	7.0	2.9	.00	.00	387	43
23	.73	3.4	1.0	.00	.65	13	6.4	8.1	12	.00	203	49
24	1.4	6.4	.94	.00	.84	11	4.1	4.1	18	.00	116	129
25	1.1	7.7	.85	.00	1.0	9.2	9.7	2.3	4.9	.00	.76	171
26	1.0	5.3	.80	.00	1.3	8.8	8.1	1.6	1.4	.00	127	145
27	.84	3.7	.75	.00	1.6	26	6.0	2.9	.80	.00	234	122
28	1.2	3.6	.72	.00	2.1	55	4.6	14	.40	.00	603	101
29	1.9	2.8	.40	.00	---	57	3.6	8.5	.28	.00	585	88
30	4.0	1.6	.20	.00	---	28	3.1	5.1	.16	.00	215	81
31	2.9	---	.10	.00	---	19	---	2.9	---	.00	171	---
TOTAL	30.47	97.24	24.02	.07	9.83	647.7	445.9	237.0	42.22	7.54	4580.04	4132
MEAN	.98	3.24	.77	.002	.35	20.9	14.9	7.55	1.41	.24	147	138
MAX	4.6	7.7	1.7	.05	2.1	62	61	68	16	3.4	603	420
MIN	.00	.84	.10	.00	.00	2.5	3.1	1.6	.00	.00	.00	43
CFSM	.003	.009	.002	.000	.001	.06	.04	.02	.004	.001	.41	.39
IN.	.00	.01	.00	.00	.00	.07	.05	.02	.00	.00	.47	.43
AC-FT	89	193	48	.1	19	1280	884	470	84	15	9040	8200

CAL YR 1976 TOTAL 55272.05 MEAN 151 MAX 1630 MIN .00 CFSM .42 IN 5.74 AC-FT 109600
WTR YR 1977 TOTAL 10234.03 MEAN 28.0 MAX 603 MIN .00 CFSM .08 IN 1.06 AC-FT 20300

05482170 BIG CEDAR CREEK NEAR VARINA, IA

LOCATION.--Lat 42°41'18", long 94°47'52", in NE1/4 NE1/4 sec.24, T.91 N., R.34 W., Pocahontas County, Hydrologic Unit 07100006, on left bank 5 ft (2 m) downstream from bridge on county highway N33, 2.0 mi (3.2 km) downstream from Drainage ditch 21, 3.5 mi (5.6 km) upstream from Drainage ditch 74, and 5.5 mi (8.8 km) northeast of Varina.

DRAINAGE AREA.--80.0 mi² (207 km²).

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,225.12 ft (373.417 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--10 years, 32.8 ft³/s (0.929 m³/s), 5.57 in/yr (141 mm/yr), 23,760 acre-ft/yr (29.3 hm³/yr); median of yearly mean discharges, 26 ft³/s (0.708 m³/s), 4.2 in/yr (107 mm/yr), 18,100 acre-ft/yr (22.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,080 ft³/s (58.9 m³/s) Aug. 31, 1952, gage height, 13.68 ft (4.170 m); maximum gage height, 15.05 ft (4.587 m) Apr. 6, 1955, backwater from ice; no flow at times in 1964, 1967, 1968, 1972, 1975, 1976.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 64 ft³/s (1.81 m³/s) March 9, gage height, 2.91 ft (1.192 m) backwater from ice, no peak above base of 400 ft³/s (11.3 m³/s); no flow for many days during ice period.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.25	.24	.00	.00	.00	1.4	1.3	.78	.49	.74	.17	9.6
2	.24	.23	.00	.00	.00	4.0	11	.71	.52	.27	.19	6.5
3	.23	.21	.00	.00	.00	12	13	.67	.38	.12	.18	4.0
4	.45	.19	.00	.00	.00	13	7.2	1.0	.34	.10	.12	2.4
5	.95	.18	.00	.00	.00	14	4.8	2.7	.32	.08	.11	2.2
6	.30	.19	.00	.00	.00	20	3.2	1.2	.27	.10	.09	1.9
7	.21	.18	.00	.00	.00	28	2.8	.65	.23	.19	.07	2.1
8	.21	.17	.00	.00	.00	37	1.7	.53	.22	1.5	.08	22
9	.21	.20	.00	.00	.00	40	1.3	.44	.25	.21	.12	33
10	.21	.23	.00	.00	.00	38	1.0	.36	.24	.15	.12	15
11	.21	.10	.00	.00	.00	36	.83	.37	.23	.26	.11	11
12	.21	.07	.00	.00	.00	23	.86	.34	.26	.75	.08	11
13	.20	.08	.00	.00	.00	16	5.1	.32	.29	.42	.07	52
14	.19	.07	.00	.00	.00	10	3.5	.32	.34	.20	.08	32
15	.17	.06	.00	.00	.00	5.6	2.8	.46	.31	.17	.22	17
16	.14	.07	.00	.00	.00	3.7	2.3	.93	.55	.17	.33	10
17	.16	.09	.00	.00	.00	3.1	2.1	.38	.31	.25	7.4	8.2
18	.24	.11	.00	.00	.00	2.7	1.8	.31	.45	.25	4.0	5.9
19	.45	.24	.00	.00	.00	2.4	2.0	.39	.24	.20	9.1	6.0
20	.54	.28	.00	.00	.00	1.9	1.6	.70	.17	.24	4.7	4.4
21	.33	.15	.00	.00	.00	1.6	1.8	.89	.16	.24	2.5	3.2
22	.21	.08	.00	.00	.00	1.5	1.7	.68	.16	.29	1.7	2.6
23	.35	.05	.00	.00	.00	1.5	1.2	.66	.27	.48	1.3	2.8
24	2.7	.04	.00	.00	.00	1.4	.93	.38	.26	.30	.87	3.2
25	1.1	.03	.00	.00	.00	1.3	.79	.33	.21	.20	.69	3.6
26	.42	.02	.00	.00	.01	1.3	.74	.38	.18	.13	.60	3.6
27	.32	.01	.00	.00	.01	1.2	.79	.45	.15	.10	.50	2.5
28	.22	.00	.00	.00	.24	1.9	2.1	.60	.18	.19	.43	2.1
29	.26	.00	.00	.00	---	6.7	.98	.52	.19	.18	.34	2.1
30	.28	.00	.00	.00	---	3.4	.82	.61	.26	.22	1.2	2.6
31	.25	---	.00	.00	---	1.8	---	.99	---	.23	11	---
TOTAL	12.25	3.57	.00	.00	.25	335.4	82.04	20.06	11.22	8.93	47.46	294.5
MEAN	.40	.12	.000	.000	.009	10.8	2.73	.65	.37	.29	1.53	9.48
MAX	2.7	.28	.00	.00	.24	40	13	2.7	3.1	1.5	11	52
MIN	.16	.00	.00	.00	.00	1.2	.74	.31	.15	.08	.07	1.5
CFSM	.005	.002	.000	.000	.000	.14	.03	.008	.005	.004	.02	.12
IN	.01	.00	.00	.00	.00	.16	.04	.01	.01	.00	.02	.13
AC-FT	24	7.1	.00	.00	.5	665	163	40	22	18	94	564

CAL YR 1976 TOTAL 1761.94 MEAN 4.81 MAX 89 MIN .00 CFSM .06 IN .82 AC-FT 3490
 VTR YR 1977 TOTAL 806.69 MEAN 2.21 MAX 52 MIN .00 CFSM .03 IN .37 AC-FT 1600

DES MOINES RIVER BASIN

05492300 NORTH RACCOON RIVER NEAR SAC CITY, IA

LOCATION.--Lat 42°20'28", long 94°59'05". In NE1/4 NW1/4 sec.24, T.87 N., R.36 W., Sac County, Hydrologic Unit 07100008, on right bank 15 ft (5 m) downstream from bridge on county highway, 0.2 mi (0.3 km) upstream from Indian Creek, 0.9 mi (1.4 km) downstream from Drainage ditch 73, and 5.6 mi (9.0 km) south of Sac City.

DRAINAGE AREA.--713 mi² (1,846 km²).

PERIOD OF RECORD.--June 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,144.60 ft (348.874 m) above mean sea level (levels by Iowa Natural Resources Council).

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--19 years, 274 ft³/s (7.760 m³/s), 5.22 in/yr (133 mm/yr), 198,500 acre-ft/yr (245 hm³/yr); median of yearly mean discharges, 240 ft³/s (6.80 m³/s), 4.6 in/yr (117 mm/yr), 174,000 acre-ft/yr (215 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s (306 m³/s) Sept. 1, 1962, gage height, 18.12 ft (5.523 m); no flow Jan. 30, to Feb. 4, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1954, reached a stage of 15.61 ft (4.758 m), from floodmark, discharge, 7,000 ft³/s (198 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 479 ft³/s (13.6 m³/s) Aug. 9, gage height, 5.43 ft (1.655 m), no peak above base of 2,000 ft³/s (56.6 m³/s); maximum gage height, 5.94 ft (1.810 m) Mar. 12, backwater from ice; no flow Jan. 30 to Feb. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	10	9.3	2.0	.00	12	41	39	20	11	10	36
2	6.1	10	9.0	1.9	.00	15	73	35	19	11	9.6	47
3	5.3	9.4	8.6	1.8	.00	20	136	37	16	10	7.7	43
4	7.5	8.4	8.4	1.7	.00	24	163	39	14	9.8	7.3	33
5	7.9	9.9	9.0	1.6	.50	32	119	45	12	7.9	7.7	23
6	8.6	8.6	7.8	1.6	.94	40	92	45	12	6.6	7.7	24
7	7.6	8.7	7.5	1.5	1.2	51	72	44	11	8.8	9.1	29
8	6.4	8.9	7.2	1.4	1.4	65	60	38	11	10	8.6	23
9	6.2	8.6	6.9	1.4	1.7	80	50	33	10	13	206	34
10	7.9	8.5	6.5	1.3	2.1	120	44	31	9.3	13	48	52
11	7.0	9.4	6.2	1.2	2.4	170	39	28	9.3	12	15	54
12	6.7	10	6.0	1.2	2.7	232	35	25	10	13	10	47
13	6.0	11	5.8	1.1	2.8	190	39	23	10	14	8.7	32
14	5.4	12	5.5	1.0	2.9	148	72	21	9.3	12	12	29
15	5.3	11	5.3	.94	3.1	108	107	23	8.8	10	20	31
16	5.0	11	5.0	.85	3.3	73	86	24	13	9.6	46	34
17	5.2	10	4.8	.75	3.4	53	76	23	16	15	84	27
18	5.7	9.8	4.6	.65	3.6	48	68	21	33	26	117	20
19	7.0	9.2	4.3	.57	3.7	41	64	31	67	22	53	33
20	7.7	10	4.1	.50	4.0	35	63	69	79	18	33	30
21	7.9	13	3.9	.42	4.2	32	65	65	48	15	67	23
22	8.4	14	3.7	.36	4.4	28	60	47	34	24	44	24
23	11	14	3.6	.31	4.7	28	56	41	105	130	34	34
24	11	12	3.4	.24	5.1	27	51	36	50	89	24	40
25	11	11	3.2	.20	5.6	26	48	29	32	52	18	29
26	17	10	3.0	.17	6.6	24	44	26	23	43	15	24
27	17	10	2.9	.14	8.0	24	42	22	18	36	13	22
28	12	10	2.7	.12	10	29	40	22	15	25	13	25
29	11	9.8	2.5	.10	---	41	44	23	14	20	9.6	64
30	10	9.5	2.3	.00	---	47	48	22	12	15	8.6	44
31	9.7	---	2.2	.00	---	50	---	22	---	13	28	---
TOTAL	257.8	307.7	164.1	27.02	88.34	1910	1994	1029	740.7	713.7	994.6	1010
MEAN	8.32	10.3	5.29	.87	3.16	61.6	65.5	33.2	24.7	23.0	32.1	33.7
MAX	17	14	9.3	2.0	10	232	163	69	105	130	206	64
MIN	5.0	8.4	2.2	.00	.00	12	36	21	8.8	6.6	7.3	20
CFSM	.01	.01	.007	.001	.004	.09	.09	.05	.04	.03	.05	.05
IN.	.01	.02	.01	.00	.00	.10	.10	.05	.04	.04	.05	.05
AC-FT	511	610	328	84	175	3790	3960	2040	1476	1420	1970	2000

CAL YR 1976 TOTAL 22314.40 MEAN 61.0 MAX 528 MIN 2.2 CFSM .09 IN 1.16 AC-FT 44260
WTR YR 1977 TOTAL 9236.96 MEAN 25.3 MAX 232 MIN .0 CFSM .04 IN .48 AC-FT 18320

05482500 NORTH RACCOON RIVER NEAR JEFFERSON, IA

LOCATION.--Lat 41°59'17", long 94°22'36", in SW1/4 NW1/4 sec.20, T.83 N., R.30 W., Greene County, Hydrologic Unit 07100006, on right bank 5 ft (2 m) downstream from bridge on State Highway 4, 0.1 mi (0.2 km) downstream from Drainage ditch 33, and 40, 1.9 mi (3.1 km) south of Jefferson, and 4.2 mi (6.8 km) upstream from Hardin Creek.

DRAINAGE AREA.--1,619 mi² (4,193 km²).

PERIOD OF RECORD.--March 1940 to current year. Prior to April 1940, monthly discharge only, published in WSP 1308. Prior to October 1955, published as Raccoon River near Jefferson.

REVISED RECORDS.--WSP 1408: Drainage area. WSP 1508: 1940 (H), 1950-51.

GAGE.--Water-stage recorder. Datum of gage is 967.09 ft (294.769 m) above mean sea level. Prior to Apr. 22, 1946, nonrecording gage at site 4 mi (6.4 km) upstream at different datum. Apr. 22 to June 25, 1946, nonrecording gage, June 26, 1946 to Sept. 30, 1955, water-stage recorder, Oct. 1, 1955 to Apr. 30, 1958, nonrecording gage, at present site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--37 years, 654 ft³/s (18.52 m³/s), 5.49 in/yr (139 mm/yr), 473,800 acre-ft/yr (584 hm³/yr); median of yearly mean discharges, 570 ft³/s (16.1 m³/s), 4.8 in/yr (122 mm/yr), 413,000 acre-ft/yr (509 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,100 ft³/s (824 m³/s) June 23, 1947, gage height, 22.3 ft (6.80 m); minimum daily, 0.6 ft³/s (0.017 m³/s) Oct. 5, 1956.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 404 ft³/s (11.4 m³/s) Aug. 26, gage height, 5.29 ft (1.612 m), no peak above base of 4,000 ft³/s (113 m³/s); maximum gage height, 5.71 ft (1.740 m) Feb. 23, backwater from ice; minimum daily discharge, 2.4 ft³/s (0.068 m³/s) Jan. 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	36	21	5.9	2.5	18	89	66	106	36	35	83
2	24	31	21	5.6	2.5	21	95	65	159	33	31	70
3	24	30	20	5.3	2.6	25	98	64	129	31	29	81
4	28	29	20	5.1	2.8	31	115	63	95	26	26	87
5	27	28	19	4.9	3.3	38	156	60	74	23	36	84
6	24	27	18	4.7	3.9	50	187	70	56	22	26	73
7	24	27	18	4.6	4.6	64	183	69	50	21	23	72
8	23	27	17	4.4	5.2	68	142	72	44	19	22	66
9	23	27	17	4.3	5.4	100	126	72	38	16	29	68
10	24	28	16	4.2	5.6	130	113	67	35	17	30	64
11	25	30	16	4.1	5.7	164	101	60	34	20	39	57
12	28	32	15	3.9	5.8	216	91	55	32	19	124	54
13	26	33	15	3.8	6.0	283	87	51	30	18	89	54
14	22	34	14	3.6	6.1	320	85	48	28	16	60	71
15	22	35	14	3.5	6.3	308	85	46	28	22	61	73
16	22	36	13	3.4	6.5	207	85	44	29	26	66	68
17	22	37	13	3.2	6.7	166	105	42	31	26	64	68
18	22	33	12	3.0	6.9	140	105	43	30	25	63	65
19	25	27	12	2.9	7.3	124	106	47	32	21	68	62
20	24	25	11	2.8	7.7	112	106	88	32	20	114	57
21	25	25	11	2.7	8.3	105	103	100	31	21	152	52
22	25	26	10	2.7	8.8	99	101	88	44	26	241	52
23	26	29	10	2.6	9.4	89	110	106	67	24	165	70
24	28	30	9.7	2.6	10	84	99	102	78	24	123	78
25	29	28	8.9	2.5	11	77	92	93	136	20	97	104
26	28	26	8.5	2.5	12	73	86	84	142	48	238	108
27	30	24	8.0	2.5	14	73	83	71	94	60	102	95
28	31	23	7.5	2.5	16	78	78	64	70	52	87	82
29	31	22	7.1	2.4	---	83	67	57	54	47	68	79
30	34	22	6.6	2.4	---	87	65	54	46	44	60	96
31	36	---	6.3	2.5	---	88	---	73	---	37	120	---
TOTAL	805	867	415.6	111.0	192.9	3521	3124	2092	1856	866	2488	2203
MEAN	26.0	28.9	13.4	3.58	6.89	114	104	67.5	61.9	27.9	80.3	73.4
MAX	36	37	21	5.9	16	320	187	106	159	60	241	108
MIN	22	22	6.3	2.4	2.5	18	65	42	28	17	22	52
CFSM	.02	.02	.008	.002	.004	.07	.06	.04	.04	.02	.05	.05
IN	.02	.02	.01	.00	.00	.08	.07	.05	.04	.02	.06	.05
AC-FT	1600	1720	824	220	383	6980	6200	4150	3680	1720	4930	4370

CAL YR 1976 TOTAL 73060.6 MEAN 200 MAX 3220 MIN 6.3 CFSM .12 IN 1.68 AC-FT 144900
WTR YR 1977 TOTAL 18541.5 MEAN 50.8 MAX 320 MIN 2.4 CFSM .03 IN .43 AC-FT 36780

DES MOINES RIVER BASIN

05483000 EAST FORK HARDIN CREEK NEAR CHURDAN, IA

LOCATION.--Lat 42°06'27", Long 94°22'12", in SE1/4 SW1/4 sec.6, T.84 N., R.30 W., Greene County, Hydrologic Unit 07100006, on left bank 35 ft (11 m) upstream from bridge on county highway E26, 1.6 mi (2.6 km) upstream from small left-bank tributary, 4.4 mi (7.1 km) upstream from mouth, and 6.5 mi (10.5 km) southeast of Churdan.

DRAINAGE AREA.--24.0 mi² (62.2 km²).

PERIOD OF RECORD.--July 1952 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1708: 1954-55, 1957 (M).

GAGE.--Water-stage recorder. Datum of gage is 1,050.90 ft (320.314 m) above mean sea level.

REMARKS.--Records good except those for winter period or those below 2.0 ft³/s (0.057 m³/s), which are poor. Small diversion for irrigation above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--25 years. 9.28 ft³/s (0.263 m³/s), 5.25 in/yr (133 mm/yr), 5,720 acre-ft/yr (8.29 hm³/yr); median of yearly mean discharges, 7.0 ft³/s (0.198 m³/s), 4.0 in/yr (102 mm/yr), 5,100 acre-ft/yr (5.29 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 413 ft³/s (11.7 m³/s) May 5, 1960, gage height, 8.92 ft (2.719 m), from rating curve extended above 270 ft³/s (7.65 m³/s); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 197 ft³/s (5.58 m³/s) Sept. 30, gage height, 6.02 ft (1.835 m), at 2245 hours, no other peak above base of 150 ft³/s (4.25 m³/s); no flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	14
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	5.5
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	5.5
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	10
5	.00	.00	.00	.00	.00	.01	.01	.00	.00	.00	.00	7.4
6	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	4.0
7	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	2.4
8	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.12	2.0
9	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	1.4	1.9
10	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.57	1.3
11	.00	.00	.00	.00	.01	.03	.00	.00	.00	.00	.43	.83
12	.00	.00	.00	.00	.02	.03	.00	.00	.00	.00	.16	.61
13	.00	.00	.00	.00	.02	.04	.00	.00	.00	.00	.02	.61
14	.00	.00	.00	.00	.01	.04	.00	.00	.00	.00	.00	.38
15	.00	.00	.00	.00	.01	.02	.00	.00	.00	.00	.64	.28
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	.21
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	5.7	.19
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.2	.17
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.20	.11
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.41	.09
21	.00	.00	.00	.00	.00	.00	.15	.00	.00	.00	47	.05
22	.00	.00	.00	.00	.00	.00	.03	.00	.00	.00	12	.07
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.0	.24
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.52	4.5
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	5.9
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9.7	3.2
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.28	1.8
28	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.03	1.1
29	.00	.00	.00	.00	---	.01	.00	.00	.00	.00	.00	3.4
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	85
31	.00	---	.00	.00	---	.00	---	.00	---	.00	15	---
TOTAL	.00	.00	.00	.00	.07	.29	.19	.00	.00	.00	115.40	144.65
MEAN	.000	.000	.000	.000	.003	.009	.006	.000	.000	.000	3.72	4.82
MAX	.00	.00	.00	.00	.02	.04	.15	.00	.00	.00	.47	.65
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.06
CFSM	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.16	.20
IN.	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.19	.22
AC-FT	.00	.00	.00	.00	.1	.6	.4	.00	.00	.00	229	287

CAL YR 1976 TOTAL 1261.56 MEAN 3.45 MAX 124 MIN .00 CFSM .14 IN 1.96 AC-FT 2500
WTR YR 1977 TOTAL 260.60 MEAN .71 MAX 65 MIN .00 CFSM .03 IN .40 AC-FT 517

LOCATION.--Lat 41°41'14", Long 94°22'15", in NE1/4 NW1/4 sec. 5, T.79 N., R.30 W., Guthrie County, Hydrologic Unit 07100007, on left bank 15 ft (5 m) downstream from bridge on county highway, 0.2 mi (0.3 km) southwest of Panora, 1.5 mi (2.4 km) upstream from Andy's Branch, and 1.7 mi (2.7 km) downstream from Lake Panora.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 991.20 ft (302.118 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. City of Panora diverts approximately 100 acre-ft/yr (0.123 hm³/yr) above station. Flow regulated by dam on Lake Panorama since August 1970. Several observations of water temperatures were made during the year.

AVERAGE DISCHARGE.--19 years, 212 ft³/s (6.004 m³/s), 6.54 in/yr (166 mm/yr), 153,600 acre-ft/yr (189 hm³/yr), median of yearly mean discharges, 170 ft³/s (4.81 m³/s), 5.2 in/yr (132 mm/yr), 123,000 acre-ft/yr (152 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,000 ft³/s (396 m³/s) May 19, 1974, gage height, 14.80 ft (4.511 m), from rating curve extended above 5,200 ft³/s (147 m³/s) by step-backwater analysis; no flow June 9, 19, 1977, result of gate operation at Lake Panoramá; minimum daily discharge excluding regulation at Lake Panoramá, 3.0 ft³/s (0.085 m³/s) Jul. 9, 14, 22-23, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 10, 1953, reached a stage of 14.3 ft (4.38 m), from floodmark, discharge, about 14,000 ft³/s (396 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,690 ft³/s (76.2 m³/s) Aug. 26, gage height, 7.75 ft (2.362 m) at 0930 hours, no other peak above base of 2,500 ft³/s (70.8 m³/s); minimum daily, no flow June 9, 10, result of gage operation at Lake Panorama; minimum daily discharge excluding regulation at Lake Panorama, 3.0 ft³/s (0.085 m³/s) Jul. 9, 14, 22-23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	35	40	29	33	25	36	19	20	4.2	4.8	174
2	30	40	39	29	34	25	37	18	18	4.2	4.5	160
3	31	50	39	28	35	25	38	18	17	4.2	4.7	710
4	32	49	40	28	35	25	38	19	16	4.2	4.8	391
5	32	49	41	28	35	25	34	20	16	4.4	7.4	114
6	32	49	41	28	34	25	33	21	15	3.9	5.0	110
7	32	49	40	27	32	26	93	21	16	3.7	4.9	101
8	32	47	39	27	29	33	33	21	8.8	3.1	4.0	108
9	33	47	39	27	26	32	32	21	.00	3.0	5.7	113
10	33	47	39	27	26	34	32	21	.00	3.1	5.1	101
11	33	47	38	27	26	65	32	19	9.3	3.5	4.9	89
12	33	46	37	27	26	121	32	20	9.3	3.1	6.0	77
13	33	46	37	27	27	143	31	21	9.8	3.1	5.9	70
14	33	45	36	28	27	66	30	20	9.8	3.0	6.2	58
15	33	45	35	28	27	35	30	20	9.8	3.2	6.6	51
16	32	44	35	28	28	36	30	19	9.8	3.6	7.7	46
17	32	43	35	28	28	36	26	19	9.8	9.6	5.7	46
18	32	43	35	28	28	37	18	19	9.3	3.7	5.4	47
19	32	43	34	28	28	37	18	18	9.3	3.2	7.6	47
20	32	43	34	28	28	37	19	19	8.8	3.1	9.3	36
21	33	43	33	28	28	38	21	19	9.8	3.2	6.2	33
22	34	43	33	28	29	38	21	21	9.3	3.0	4.7	41
23	34	42	32	29	29	38	21	21	8.2	3.0	4.8	314
24	34	42	32	29	28	38	20	21	5.2	3.4	4.0	100
25	34	42	32	29	26	35	20	21	4.8	3.2	4.4	90
26	34	42	31	29	25	35	18	20	4.8	3.4	1140	82
27	34	42	31	29	25	36	14	20	4.8	3.5	705	71
28	34	40	31	29	25	42	14	21	4.5	49	298	59
29	34	40	30	30	---	38	16	21	4.5	11	195	52
30	35	40	30	31	---	36	19	21	4.2	7.2	133	48
31	35	---	29	32	---	35	---	22	---	5.4	158	---
TOTAL	1017	1323	1087	878	807	1295	791	620	281.90	172.4	2270.3	3535
MEAN	32.8	44.1	34.4	28.3	28.8	41.8	26.4	20.0	9.40	5.56	73.2	118
MAX	35	50	41	32	35	143	37	22	20	49	1140	710
MIN	30	38	29	27	25	14	18	18	.00	3.0	4.0	33
CF5M	.08	.10	.08	.07	.07	.10	.06	.05	.02	.01	.17	.27
IN.	.09	.11	.09	.07	.07	.11	.07	.05	.02	.01	.19	.30
AC-FT	2020	2620	2180	1740	1600	2570	1570	1230	559	342	4500	7010
CAL YR 1976	TOTAL	57503.00	MEAN	157	MAX	3860	MIN	28	CF5M	.36	IN	4.85
WTR YR 1977	TOTAL	14087.60	MEAN	38.6	MAX	1140	MIN	.00	CF5M	.09	IN	1.19
										AC-FT	114100	27940

DES MOINES RIVER BASIN

05484000 SOUTH RACCOON RIVER AT REDFIELD, IA

LOCATION.--Lat 41°34'48", long 94°10'58", in SW1/4 SW1/4 sec.3, T.78 N., R.29 W., Dallas County, Hydrologic Unit 07100007, on left bank 15 ft (5 m) downstream from bridge on county highway at Redfield, 0.6 mi (1.3 km) downstream from bridge on U.S. Highway 6, 1.0 mi (1.6 km) downstream from Middle Raccoon River, and 15.6 mi (25.1 km) upstream from mouth.

DRAINAGE AREA.--998 mi² (2,558 km²).

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1940.

GAGE.--Water-stage recorder. Datum of gage is 895.43 ft (273.232 m) above mean sea level. Prior to June 12, 1946, nonrecording gage, and June 12, 1946, to Sept. 30, 1956, water-stage recorder at site 28 ft 16 m) upstream at same datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Six discharge measurement furnished by Corps of Engineers.

AVERAGE DISCHARGE.--37 years, 442 ft³/s (12.62 m³/s), 6.08 in./yr (154 mm/yr), 320,200 acre-ft/yr (395 hm³/yr); median of yearly mean discharges, 380 ft³/s (10.8 m³/s), 5.2 in./yr (132 mm/yr), 275,000 acre-ft/yr (339 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,000 ft³/s (991 m³/s) July 2, 1958, gage height, 29.04 ft (8.851 m), from floodmarks; minimum daily, 17 ft³/s (0.48 m³/s) Aug. 4, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft³/s (142 m³/s) and maximum ("")

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)
Aug. 28	0930	*11,300 319	*15.90 4.646	Sept. 3	2215	7,870 223	12.97 3.953
Aug. 28	0215	8,740 248	13.76 4.194				

Minimum daily discharge, 17 ft³/s (0.48 m³/s) Aug. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	81	71	49	55	118	99	85	51	27	22	1120
2	75	82	69	60	55	120	178	67	48	27	28	621
3	70	90	88	62	55	122	180	65	48	27	20	3130
4	80	99	56	53	55	124	184	84	44	28	17	2580
5	89	98	66	84	55	128	171	88	43	26	60	1090
6	79	101	64	55	66	132	126	104	42	24	275	630
7	72	102	63	63	57	138	108	103	36	28	81	433
8	65	77	62	52	59	146	90	84	37	28	38	380
9	66	90	62	51	62	154	85	88	38	27	45	946
10	66	94	62	60	64	158	80	61	36	24	54	824
11	69	80	62	50	67	212	75	88	38	31	37	340
12	71	62	62	61	70	430	70	57	31	44	23	260
13	67	74	62	61	73	332	84	80	31	40	21	252
14	65	89	61	62	76	280	93	49	41	31	20	209
15	65	100	60	53	81	194	93	49	44	27	20	177
16	63	104	59	54	85	105	84	55	38	47	35	158
17	64	104	57	54	89	111	80	57	46	64	125	144
18	70	98	55	54	93	90	77	57	44	142	59	155
19	63	90	54	55	98	108	70	62	38	85	35	140
20	65	83	53	55	104	106	75	52	38	40	225	106
21	78	74	52	56	110	123	103	60	36	32	72	93
22	74	68	50	55	120	117	106	80	36	32	38	101
23	79	70	49	53	136	111	86	70	78	33	28	495
24	84	78	48	52	144	74	74	57	87	34	24	1320
25	81	80	48	55	138	74	65	53	60	36	22	542
26	78	80	48	54	130	81	64	51	53	27	6080	354
27	78	78	48	54	124	120	64	50	40	20	1620	291
28	77	75	48	54	120	171	61	49	34	150	4090	236
29	79	74	48	54	---	222	59	84	33	660	1150	202
30	84	73	48	55	---	202	60	72	30	195	649	193
31	67	---	48	55	---	129	---	56	---	64	1370	---
TOTAL	2317	2546	1772	1644	2430	4762	2843	2017	1297	2100	16374	17223
MEAN	74.7	84.9	57.2	53.0	86.8	164	94.8	65.1	43.2	67.7	828	574
MAX	89	104	71	56	144	430	184	104	87	660	6080	3130
MIN	63	62	48	48	55	74	58	49	30	20	17	93
CFSM	.08	.09	.06	.05	.09	.16	.10	.07	.04	.07	.53	.68
IN.	.09	.10	.07	.06	.09	.18	.11	.08	.05	.08	.62	.85
AC-FT	4600	5050	3510	3260	4820	9450	5640	4000	2670	4170	32480	34160

CAL YR 1976	TOTAL	142295	MEAN 389	MAX 5370	MIN 48	CFSM .39	IN 5.36	AC-FT 282200
WTR YR 1977	TOTAL	87325	MEAN 187	MAX 6080	MIN 17	CFSM .16 <td>IN 2.18</td> <td>AC-FT 113700</td>	IN 2.18	AC-FT 113700

05484500 RACCOON RIVER AT VAN METER, IA

LOCATION.--Lat 41°32'02", long 93°55'59", in SW1/4 SW1/4 sec.22, T.78 N., R.27 W., Dallas County, Hydrologic Unit 07100007, on right bank 10 ft (3.0 m) downstream from bridge on county highway R16, 0.3 mi (0.5 km) northeast of Van Meter, 0.7 mi (1.1 km) upstream from small left bank tributary, 1.2 mi (1.9 km) downstream from confluence of North and South Raccoon River, and 30 mi (48.3 km) upstream from mouth.

DRAINAGE AREA.--3,441 mi² (8,912 km²).

PERIOD OF RECORD.--April 1915 to current year. Prior to October 1934, monthly discharge only, published in VSP 1308.

REVISED RECORDS.--VSP 1308: 1927 (M). VSP 1438: Drainage area. VSP 1508: 1915 (M), 1916-17, 1918-23 (M), 1925 (M), 1926, 1933 (M), 1939 (M), 1947 (M), 1949 (M).

GAGE.--Water-stage recorder. Datum of gage is 841.16 ft (256.385 m) above mean sea level. See VSP 1308 for history of changes prior to Aug. 8, 1934.

REMARKS.--Records good except those for winter period, which are poor. Corps of Engineers rain gage and gage height telemeters at station.

COOPERATION.--Ten discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--82 years, 1,291 ft³/s (36.55 m³/s), 5.09 in/yr (129 mm/yr), 935,300 acre-ft/yr (1,150 hm³/yr); median of yearly mean discharges, 1,100 ft³/s (31.2 m³/s), 4.3 in/yr (109 mm/yr), 797,000 acre-ft/yr (983 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,200 ft³/s (1,170 m³/s) June 13, 1947, gage height, 21.37 ft (6.514 m), from floodmark; maximum gage height, 21.77 ft (6.635 m) July 3, 1958; minimum daily discharge, 10 ft³/s (0.28 m³/s) Jan. 22-31, 1940.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,500 ft³/s (241 m³/s) and maximum (P):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Aug. 28	1345	11,600 329	12.50 3.810	Aug. 28	0500	*11,900 337	*12.79 3.898

Minimum daily discharge, 43 ft³/s (1.22 m³/s) Jul. 10, 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	119	141	112	58	57	149	235	161	127	75	74	1750
2	115	140	106	62	56	160	296	161	167	82	64	1040
3	116	137	104	70	56	178	320	164	202	73	82	2540
4	141	145	102	70	57	210	347	189	233	81	85	4230
5	151	145	102	71	58	230	350	189	217	64	58	1540
6	144	144	102	72	60	238	310	178	169	64	266	981
7	136	140	102	70	61	259	333	199	125	88	210	719
8	134	134	102	68	67	314	339	178	107	64	106	614
9	130	132	104	66	70	350	307	150	97	53	118	1560
10	128	130	104	66	73	380	272	139	78	43	144	989
11	128	124	104	61	73	420	243	139	74	62	230	629
12	131	114	102	67	74	620	220	130	74	60	144	495
13	140	102	100	60	76	674	204	119	78	57	74	444
14	128	134	98	61	77	636	199	114	74	43	127	393
15	110	148	96	62	86	600	199	105	71	47	143	328
16	105	160	93	63	87	562	190	108	64	71	127	305
17	100	164	90	62	85	474	181	110	81	141	220	300
18	101	158	84	63	86	403	185	91	91	239	316	298
19	116	156	80	65	90	362	203	99	59	214	305	277
20	135	151	78	66	96	322	208	115	71	106	288	225
21	130	146	74	65	100	300	222	127	61	73	381	199
22	119	134	72	65	104	278	262	262	58	57	283	215
23	122	120	70	62	128	253	282	301	78	59	363	357
24	134	110	68	61	150	226	238	241	133	61	616	1930
25	134	122	66	60	160	208	210	227	148	62	418	1000
26	127	138	64	60	154	196	190	219	118	59	6500	663
27	126	95	63	60	144	231	186	211	151	50	3410	548
28	123	120	63	60	140	285	178	181	159	52	7440	496
29	123	124	62	59	---	455	167	161	114	246	2470	424
30	139	120	61	58	---	383	163	195	86	476	1180	393
31	142	---	60	57	---	282	---	153	---	144	2620	---
TOTAL	3928	4028	2688	1961	2525	10638	7240	5076	3363	3066	28692	25882
MEAN	127	134	85.7	63.3	80.2	343	241	164	112	98.9	925	863
MAX	151	164	112	72	150	674	350	301	233	476	7440	4230
MIN	100	95	60	57	86	149	163	91	59	43	52	199
CFSM	.04	.04	.03	.02	.03	.10	.07	.05	.03	.03	.27	.25
IN.	.04	.04	.03	.02	.03	.12	.08	.05	.04	.03	.31	.28
AC-FT	7790	7990	5330	3890	5010	21100	14360	10070	6670	6080	56910	51340

CAL YR 1976 TOTAL 344310 MEAN 941 MAX 11300 MIN 60 CFSM .27 IN 3.72 AC-FT 682900
 VTR YR 1977 TOTAL 99087 MEAN 271 MAX 7440 MIN 43 CFSM .08 IN 1.07 AC-FT 196500

DES MOINES RIVER BASIN

05484500 RACCOON RIVER AT VAN METER, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969-73, 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS) (00061)	TOTAL CAL- CIUM (CA) (MG/L) (00916)	TOTAL MAG- NE- SIUM (MG) (MG/L) (00927)	TOTAL SODIUM (NA) (MG/L) (00929)	TOTAL PO- TAS- SIUM (K) (MG/L) (00937)	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	ALKA- LINITY AS CACO3 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)
OCT											
27...	1155	131	56	24	17	2.6	250	--	205	50	22
NOV											
30...	1135	E40	83	38	22	3.2	359	--	294	71	29
DEC											
29...	0855	E60	78	30	21	3.0	327	0	268	62	23
JAN											
26...	0920	E50	70	25	20	2.9	315	0	258	51	25
MAR											
01...	0940	149	55	21	16	3.0	241	--	198	48	16
29...	0940	490	65	25	19	5.0	243	--	200	82	24
APR											
26...	1745	190	40	25	25	4.6	160	0	130	72	38
MAY											
25...	0945	245	54	21	20	5.2	190	0	160	51	27
AUG											
02...	1730	64	54	21	49	7.5	200	0	160	90	54
24...	0915	516	44	16	17	5.2	180	--	120	37	21
SEP											
28...	1030	496	65	25	18	5.7	260	0	210	45	27

DATE	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL AMMONIA NITRO- GEN (N) (MG/L) (00610)	TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	TOTAL NITRO- GEN (N) (MG/L) (00600)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (MG/L) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (MG/L) (70302)
OCT										
27...	1.2	.09	1.2	1.3	2.5	11	.15	312	.42	110
NOV										
30...	2.3	.39	1.0	1.4	3.7	18	.17	481	.65	--
DEC										
29...	2.1	1.6	.30	1.9	4.0	18	.20	409	.55	--
JAN										
26...	2.0	1.4	.50	1.9	3.9	17	.17	395	.54	--
MAR										
01...	1.2	1.4	.60	2.0	3.2	14	.21	303	.41	122
29...	1.3	.52	2.6	3.1	4.4	19	.60	345	.47	458
APR										
26...	.04	.56	1.7	2.3	2.3	10	.25	321	.44	165
MAY										
25...	1.9	.37	2.1	2.5	4.4	19	.37	319	.43	211
AUG										
02...	.89	4.5	8.5	13	14	61	4.4	397	.54	59.6
24...	2.1	.30	.80	1.1	3.2	14	.34	232	.32	323
SEP										
28...	3.6	.02	1.7	1.7	5.2	23	.27	360	.49	482

DES MOINES RIVER BASIN

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05484500 RACCOON RIVER AT VAN METER, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL RESI- DUE (MG/L) (00500)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	DIS- SOLVED OXYGEN (MG/L) (00300)	PER- CENT SATUR- ATION (00301)	CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340)	CARBON DIOXIDE (CO2) (MG/L) (00405)	FECAL COLI- FORM -7UM-WF (COL./ 100 ML) (31625)
OCT 27...	340	540	8.6	8.0	5.0	13.4	102	17	1.0	30
NOV 30...	482	520	8.4	.0	5.0	12.3	86	2	2.3	210
DEC 29...	417	550	8.0	.0	5.0	11.5	79	10	5.2	--
JAN 26...	390	540	7.5	.0	5.0	10.5	74	8	16	1300
MAR 01...	310	510	--	.0	5.0	16.4	110	17	--	100
29...	540	540	8.4	10.0	70	9.8	95	50	1.5	32000
APR 26...	361	440	8.8	23.0	10	--	--	32	.4	240
MAY 25...	445	500	8.3	24.0	55	--	--	39	1.5	490
AUG 02...	457	--	7.6	28.5	28	--	--	40	8.0	200
24...	385	420	--	19.0	37	7.9	89	52	--	160
SEP 26...	477	580	8.7	16.8	41	--	--	31	.8	190

DES MOINES RIVER BASIN

05484800 WALNUT CREEK AT DES MOINES, IA

LOCATION.--Lat 41°35'14", long 93°42'11", in SW1/4 SE1/4 sec.2, T.78 N., R.25 W., Polk County, Hydrologic Unit 07100006, on left bank, 25 ft (8 m) downstream from bridge on 83rd Street in Des Moines, and 2.2 mi (3.5 km) upstream from Raccoon River.

DRAINAGE AREA.--80.9 mi² (210 km²).

PERIOD OF RECORD.--October 1971 to current year.

REVISED RECORDS.--WRD Iowa 1973: 1972; WRD Iowa 1975: 1973-74.

GAGE.--Water-stage recorder. Datum of gage is 801.04 ft (244.157 m) above mean sea level (levels by Iowa Natural Resources Council).

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--8 years, 71.5 ft³/s (2.025 m³/s), 12.00 in/yr (305 mm/yr), 51,000 acre-ft/yr (63.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,000 ft³/s (255 m³/s) July 1, 1973, gage height, 17.72 ft (5.401 m); no flow for many days in 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 600 ft³/s (17.0 m³/s) and maximum ("):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)
Aug. 28	0415	1,400 39.6	11.84 3.609	Aug. 31	0715	745 21.1	9.43 2.874
Aug. 28	0145	*2,590 73.3	*14.48 4.414	Sept. 17	21.00	802 17.0	8.70 2.652

No flow Jan. 3-Feb. 7, June 11-22, July 30-Aug. 4, Aug. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	1.1	.15	.02	.00	3.3	29	14	1.8	8.7	.00	105
2	1.1	.99	.15	.01	.00	3.0	30	14	1.3	7.3	.00	96
3	1.0	.94	.14	.00	.00	2.8	30	9.1	1.3	9.1	.00	122
4	10	.78	.13	.00	.00	2.7	45	14	1.3	7.8	.00	145
5	3.1	.78	.13	.00	.00	3.7	23	15	1.0	7.8	25	79
6	1.0	.82	.12	.00	.00	5.0	19	12	.20	14	4.1	49
7	1.1	.85	.12	.00	.00	7.0	12	9.2	.20	30	1.3	48
8	1.0	.83	.12	.00	.01	6.0	10	6.9	.20	6.9	.25	36
9	1.0	.71	.12	.00	.02	4.5	8.7	5.5	.15	4.8	44	149
10	1.2	.65	.13	.00	.02	12	6.9	5.2	.10	4.8	3.1	80
11	1.7	.55	.13	.00	.02	30	5.5	4.5	.00	9.1	5.2	50
12	1.2	.64	.14	.00	.03	75	4.8	4.5	.00	6.0	.78	42
13	.86	.61	.15	.00	.04	23	4.8	4.1	.00	3.8	.40	42
14	1.0	.71	.19	.00	.05	7.8	4.5	4.1	.00	1.3	.20	37
15	1.9	.75	.23	.00	.08	4.5	4.8	5.5	.00	21	1.5	30
16	2.3	.75	.28	.00	.10	4.1	4.1	4.1	.00	21	24	22
17	3.5	.87	.32	.00	.13	14	3.8	3.8	.00	55	.78	125
18	5.6	.75	.35	.00	.17	20	3.8	3.4	.00	32	.40	110
19	6.9	2.0	.30	.00	.23	15	3.4	2.0	.00	18	.10	61
20	4.4	2.1	.25	.00	.30	11	17	6.4	.00	8.7	.00	39
21	5.3	1.1	.23	.00	.42	18	22	6.0	.00	5.2	54	32
22	4.6	1.4	.21	.00	.55	7.8	9.5	5.5	.00	3.1	2.4	51
23	7.3	.86	.20	.00	.76	8.2	6.4	5.0	120	1.8	.50	88
24	7.8	1.2	.18	.00	1.0	12	7.8	4.5	32	3.1	.30	99
25	4.0	1.8	.17	.00	1.4	11	9.7	4.0	20	1.0	29	75
26	3.2	1.2	.16	.00	1.9	11	7.3	3.5	14	.75	326	59
27	2.6	.57	.15	.00	2.5	36	7.3	5.2	9.6	.25	169	44
28	2.3	.20	.10	.00	3.5	82	13	7.8	8.2	.75	734	36
29	2.1	.18	.07	.00	---	42	23	3.1	8.7	2.4	124	34
30	4.7	.17	.05	.00	---	26	13	3.8	8.7	.00	55	35
31	2.3	---	.03	.00	---	19	---	2.4	---	.00	217	---
TOTAL	97.16	26.42	5.21	.03	13.34	527.4	389.2	197.1	228.75	296.15	1832.25	1975
MEAN	3.13	.88	.17	.001	.48	17.0	13.0	6.36	7.63	9.55	59.1	55.8
MAX	10	2.1	.35	.02	3.5	82	46	15	120	56	734	149
MIN	.86	.17	.03	.00	.00	2.7	3.4	2.0	.00	.00	.00	22
CFSM	.04	.01	.002	.000	.006	.21	.16	.08	.09	.12	.73	.81
IN	.04	.01	.00	.00	.01	.24	.18	.09	.11	.14	.64	.91
AC-FT	193	52	10	.06	26	1050	772	391	454	587	3630	3920

CAL YR	TOTAL	MEAN	MAX	MIN	CFSM	IN	AC-FT
YR 1976	21714.10	69.3	1550	.02	.73	9.98	43070
YR 1977	5589.01	15.3	734	.00	.19	2.57	11080

05485500 DES MOINES RIVER BELOW RACCOON RIVER AT DES MOINES, IA

LOCATION.--Lat 41°34'30", long 93°35'48", in NE1/4 SE1/4 sec.10, T.78 N., R.24 W., Polk County, Hydrologic Unit 07100008, on right bank 10 ft (3 m) downstream from bridge on Southeast 14th Street at Des Moines, 0.8 mi (1.3 km) downstream from Raccoon River and Scott Street Dam, and at mile 200.7 (322.9 km).

DRAINAGE AREA.--9,879 mi² (25,586 km²).

PERIOD OF RECORD.--April 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1943 (P).

GAGE.--Water-stage recorder. Datum of gage is 762.52 ft (232.42 m) above mean sea level. Prior to Oct. 1, 1951, and Oct. 1, 1953, to Sept. 30, 1959, water-stage recorder above Scott Street Dam, 0.8 mi (1.3 km) upstream at datum 11.16 ft (3.40 m) higher. Oct. 1, 1951, to Sept. 30, 1953, and Oct. 1, 1959 to Sept. 30, 1961, nonrecording gage at present site and datum.

REMARKS.--Records good except those for winter period, which are poor. Des Moines municipal water supply is taken from infiltration galleries on Raccoon River, 3.5 mi (5.6 km) above station. Average daily pumpage was about 55 ft³/s (1.56 m³/s). At times, water is pumped from Raccoon River into recharge basins, or into Waterworks Reservoir, capacity, 4,800 acre-ft (5.92 hm³). Effluent from sewage treatment plant enters the river 2.3 mi (3.7 km) below station. Net effect of diversions not known. Several observations of water temperature were made during the year. Flow regulated by Saylorville Lake (station 05481830) 13.0 mi (20.9 km) upstream, since Apr. 12, 1977. Corps of Engineers gage height telemeter at station.

COOPERATION.--Fourteen discharge measurements furnished by Corps of Engineers. Average monthly pumpage from galleries furnished by Des Moines Water Works.

AVERAGE DISCHARGE.--37 years, 3,982 ft³/s (113 m³/s), 5.47 in/yr (139 mm/yr), 2,885,000 acre-ft/yr (3,557 hm³/yr); median of yearly mean discharges, 3,420 ft³/s (96.8 m³/s) 4.7 in/yr (119 mm/yr), 2,500,000 acre-ft/yr (3,082 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 77,000 ft³/s (2,180 m³/s) June 26, 1947, gage height, 20.8 ft (6.34 m) in gage well, 21.6 ft (6.58 m) from outside floodmark, site and datum then in use; minimum daily, 26 ft³/s (0.74 m³/s) Jan. 16-29, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1893, that of June 26, 1947, site and datum then in use. Flood of May 31, 1903, reached a stage of 20.9 ft (6.37 m), from flood profile at Scott Street site and datum, by office of Des Moines City Engineer.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,600 cfs (385 m³/s) Aug. 28, gage height, 16.98 ft (5.176 m); minimum daily, 26 ft³/s (0.74 m³/s) Jan. 16-29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	174	328	155	52	27	346	735	371	202	219	154	3120
2	233	426	150	43	27	326	806	367	263	268	123	1830
3	339	269	140	36	27	381	848	379	272	276	98	1510
4	222	104	130	34	27	387	999	411	295	284	91	5670
5	223	162	120	33	27	381	1010	430	316	288	174	2670
6	204	220	120	32	27	397	963	413	295	178	137	1790
7	197	214	120	31	27	371	930	448	266	92	231	1290
8	186	204	115	30	27	422	912	415	262	63	211	1060
9	193	213	110	29	45	474	845	374	238	85	300	1770
10	192	209	105	29	55	503	721	347	233	93	165	2350
11	179	201	100	28	63	749	641	342	224	92	207	1460
12	176	125	97	28	75	839	577	336	264	92	288	1150
13	162	120	92	28	95	1010	457	327	273	85	244	1290
14	83	130	87	27	95	1120	397	321	269	87	202	1680
15	72	154	84	27	105	1300	409	321	251	108	201	1370
16	76	175	80	26	120	1290	409	305	250	142	346	1280
17	101	213	70	26	130	1190	409	270	252	217	376	1410
18	103	240	66	26	150	1100	379	258	182	198	668	1590
19	116	245	80	26	170	965	387	258	170	202	637	856
20	128	272	110	26	190	839	424	274	154	173	432	697
21	133	285	95	26	215	782	511	285	143	125	749	535
22	133	297	78	26	274	694	424	305	170	94	612	499
23	143	284	72	26	273	628	446	334	175	87	567	633
24	169	211	69	26	306	521	453	370	445	100	495	1460
25	171	262	56	26	316	642	394	334	214	98	868	2490
26	178	292	79	26	349	607	269	313	227	90	1950	1620
27	173	243	92	26	343	694	381	329	164	90	7200	1700
28	197	210	115	26	312	813	387	344	219	83	11000	1560
29	215	185	95	26	---	866	354	325	197	75	8210	1420
30	241	170	75	27	---	847	367	309	182	168	2170	1210
31	242	---	61	27	---	755	---	310	---	331	2670	---
TOTAL	5335	6573	3026	905	3887	22339	17262	10532	7605	4595	38376	49110
MEAN	172	222	97.6	29.2	139	721	575	340	254	148	1238	1637
MAX	339	426	155	52	349	1300	1010	445	264	331	11000	5670
MIN	72	104	61	26	27	326	265	143	63	83	91	499
CFSM	.02	.02	.01	.003	.01	.07	.06	.03	.03	.02	.13	.17
IN.	.02	.03	.01	.00	.01	.08	.06	.04	.03	.02	.14	.18
AC-FT	10580	13240	6000	1800	7710	44310	34220	20890	15080	9090	76120	97410

CAL YR 1976 TOTAL 784785 MEAN 2090 MAX 16300 MIN 61 CFSM .21 IN 2.88 AC-FT 1517000
WTR YR 1977 TOTAL 189626 MEAN 465 MAX 11000 MIN 26 CFSM .08 IN .64 AC-FT 335500

DES MOINES RIVER BASIN

05495920 DES MOINES RIVER BELOW DES MOINES, IA

WATER-QUALITY RECORDS

LOCATION.--Lat 41°33'03", long 93°31'29", in NE1/4 NE1/4 sec.20, T.78 N., R.23 W., Polk County, Hydrologic Unit 07100008, at bridge on State Highway 8 near east edge of Des Moines, 0.2 mi (0.3 km) downstream from unnamed stream, 1.4 mi (2.3 km) upstream from Fourmile Creek, and at mile 195.9 (315.2 km).

DRAINAGE AREA.--9,901 mi² (25,644 km²).

PERIOD OF RECORD.--Water years 1971, 1975 to current year.

REMARKS.--Water discharge estimated on basis of records at gaging station 4.8 mi (7.7 km) upstream at SE 14th Street, Des Moines. No significant inflow between gaging station and sampling site.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	TOTAL CAL- CIUM (CA) (MG/L) (00916)	TOTAL MAG- NE- SIUM (MG) (MG/L) (00927)	TOTAL SODIUM (NA) (MG/L) (00929)	TOTAL PO- TAS- SIUM (K) (MG/L) (00937)	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	ALKA- LITY AS CACO3 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00946)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)
OCT 27...	1250	158	58	27	34	4.8	243	--	199	74	47
NOV 30...	1230	170	70	31	53	9.5	113	--	93	120	57
DEC 29...	1015	117	85	37	68	8.0	353	0	290	180	78
JAN 29...	1020	126	92	33	95	14	396	0	325	180	110
MAR 01...	1110	1300	--	--	--	--	304	--	249	110	66
MAR 29...	1100	568	63	21	27	5.7	199	--	160	81	37
APR 26...	1930	195	41	27	40	6.7	200	0	160	110	58
MAY 24...	1545	190	58	25	30	6.0	200	0	160	90	42
AUG 02...	1145	123	43	23	27	6.7	200	0	160	85	33
AUG 23...	1230	567	51	17	24	5.9	160	--	130	52	26
SEP 27...	1345	1700	63	25	22	6.4	240	0	200	58	34

DATE	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL AMMONIA NITRO- GEN (N) (MG/L) (00610)	TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605)	TOTAL KJEL- DAHL- NITRO- GEN (N) (MG/L) (00625)	TOTAL NITRO- GEN (N) (MG/L) (00600)	TOTAL NITRO- GEN (NO3) (MG/L) (71887)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (PER AC-FT) (TONS PER DAY) (70303)	DIS- SOLVED SOLIDS (PER DAY) (TONS PER DAY) (70302)
OCT 27...	2.0	1.5	1.8	3.3	5.3	23	1.3	425	.58	181
NOV 30...	4.2	2.5	5.3	7.9	12	54	2.0	510	.69	--
DEC 29...	1.8	7.8	7.4	15	17	74	2.9	611	.83	193
JAN 26...	2.3	16	6.0	22	24	110	5.0	704	.96	--
MAR 01...	.72	3.0	1.6	4.6	5.3	24	.73	389	.80	--
MAR 29...	1.3	1.1	2.2	3.3	4.6	20	.71	354	.48	543
APR 26...	1.2	3.7	3.0	6.7	7.9	35	2.2	419	.87	221
MAY 24...	.31	.19	2.3	2.6	2.8	12	.31	372	.61	191
AUG 02...	.80	.02	1.4	1.4	2.2	9.7	.32	309	.42	103
AUG 23...	3.7	.23	.98	.81	4.5	20	.92	288	.39	441
SEP 27...	4.0	.48	1.2	1.7	5.7	28	.60	377	.61	1730

DES MOINES RIVER BASIN

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05485520 DES MOINES RIVER BELOW DES MOINES, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL RESI- DUE (MG/L) (00500)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	DIS- SOLVED OXYGEN (MG/L) (00300)	PER- CENT SATUR- ATION (00301)	CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340)	CARBON DIOXIDE (CO2) (MG/L) (00405)	FECAL COLI- FORM .7UM-MF (COL./ 100 ML) (31625)
OCT 27...	478	720	8.4	16.0	5.0	9.8	95	26	1.5	--
NOV 30...	575	640	8.5	10.5	8.0	9.2	83	29	.6	24000
DEC 29...	668	980	8.2	2.0	15	12.2	88	33	3.6	--
JAN 26...	752	1200	7.4	14.0	20	10.1	100	56	25	95000
MAR 01...	542	800	--	.5	5.0	16.4	110	28	--	34000
29...	564	580	8.6	11.5	30	--	--	50	.9	10000
APR 26...	445	--	8.5	21.0	9.0	--	--	53	1.0	680000
MAY 24...	443	650	8.4	27.0	29	--	--	42	1.3	140000
AUG 02...	441	--	7.2	26.0	55	--	--	97	20	440000
23...	452	500	--	23.0	80	--	--	54	--	16000
SEP 27...	558	610	8.4	20.0	85	--	--	--	1.5	14000

DES MOINES RIVER BASIN

05485640 - FOURMILE CREEK AT DES MOINES, IA

LOCATION.--Lat 41°36'59", long 93°32'43", in NE1/4 NE1/4 sec.32, T.79 N., R.23 W., Polk County, Hydrologic Unit 07100009, on right bank 20 ft (6 m) downstream from bridge on Easton Blvd., 4.4 mi (7.1 km) downstream from Muchiknock Creek and 5.0 mi (8.0 km) upstream from Des Moines River.

DRAINAGE AREA.--92.7 mi² (240 km²).

PERIOD OF RECORD.--October 1971 to current year.

REVISED RECORDS.--WRD IA-75-1: 1974 (P).

GAGE.--Water-stage recorder. Datum of gage is 799.87 ft (242.581 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--8 years, 75.5 ft³/s (2.138 m³/s), 11.1 in/yr (282 mm/yr), 54,700 acre-ft/yr (87.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,340 ft³/s (151 m³/s) June 9, 1974, gage height, 14.84 ft (4.523 m); no flow for many days in 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximum ("")

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)
Aug. 26	0345	854 24.2	8.18 2.493	Sept. 3	1430	668 18.9	7.51 2.289
Aug. 28	0615	*5,380 152	*14.84 4.462	Sept. 17	2400	612 17.3	7.26 2.213

No flow for many days during both winter period and the period June - Aug.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	1.9	.40	.03	.00	4.2	5.9	7.8	1.5	.00	.00	92
2	1.4	1.7	.31	.00	.00	4.0	10	4.6	.75	.00	.00	57
3	1.4	1.5	.24	.00	.00	3.5	7.8	6.5	1.2	.00	.00	226
4	3.9	1.2	.19	.00	.00	3.0	17	9.1	2.5	.00	.00	164
5	3.7	1.5	.15	.00	.00	5.0	9.4	9.4	1.9	.00	.00	73
6	1.3	1.4	.14	.00	.00	7.0	6.5	44	1.5	1.4	.00	44
7	1.1	1.2	.13	.00	.00	6.9	4.9	27	.90	.00	.00	43
8	.92	1.4	.16	.00	.01	7.9	4.0	13	1.4	.00	.00	34
9	1.0	1.5	.20	.00	.02	5.1	3.3	7.8	1.5	.00	.00	182
10	1.0	1.5	.26	.00	.03	7.4	3.1	5.7	.90	.00	.00	91
11	.63	1.0	.32	.00	.03	29	2.5	4.9	.00	.00	.00	56
12	.72	1.1	.40	.00	.04	23	2.5	4.6	.00	.00	.00	44
13	.55	1.1	.51	.00	.05	10	2.7	3.8	.75	.00	.00	35
14	.57	1.8	.32	.00	.07	6.5	2.7	3.6	1.4	.00	.00	27
15	.51	3.5	.20	.00	.09	5.4	2.7	3.8	1.4	.90	.00	24
16	.68	2.8	.22	.00	.13	3.8	2.3	5.1	.00	.00	112	22
17	.77	1.6	.27	.00	.19	4.9	2.3	4.6	.00	.00	.00	74
18	1.1	2.0	.33	.00	.23	5.9	2.3	4.0	.00	.00	14	236
19	1.5	2.2	.43	.00	.30	4.3	3.1	4.0	.00	.00	10	83
20	1.7	2.2	.39	.00	.39	3.3	6.8	4.6	.00	.00	12	50
21	1.4	2.8	.36	.00	.52	4.6	12	6.5	.00	.00	58	36
22	1.4	1.5	.32	.00	.70	5.4	4.0	6.2	.00	.00	.00	38
23	1.7	1.5	.29	.00	.90	2.9	4.0	2.1	3.1	.00	138	51
24	1.9	1.5	.26	.00	1.2	2.3	3.5	2.9	1.1	.00	131	112
25	2.1	1.6	.24	.00	1.6	2.1	4.3	2.7	.00	.00	268	78
26	1.9	1.3	.21	.00	2.2	1.9	4.6	1.7	.00	.00	527	56
27	2.1	1.0	.19	.00	2.9	10	5.4	.15	.00	.00	115	43
28	1.9	.82	.18	.00	3.8	24	7.2	1.4	.00	.00	959	38
29	1.9	.64	.12	.00	---	19	7.8	1.9	.00	.00	195	38
30	2.9	.50	.07	.00	---	7.2	8.8	1.5	.00	.00	.00	55
31	1.9	---	.05	.00	---	8.4	---	1.7	---	.00	121	---
TOTAL	46.98	47.16	7.86	.03	15.39	234.7	163.4	206.85	21.80	2.30	2776.00	2192
MEAN	1.51	1.57	.25	.001	.55	7.57	5.46	6.67	.73	.074	89.5	72.7
MAX	3.9	3.5	.51	.03	3.8	29	17	44	3.1	1.4	959	236
MIN	.51	.50	.05	.00	.00	1.9	2.3	.15	.00	.00	.00	22
CFSM	.02	.02	.003	.000	.006	.08	.05	.07	.008	.001	1.97	.78
IN.	.02	.02	.00	.00	.01	.09	.07	.08	.01	.00	1.11	.88
AC-FT	93	94	16	.06	31	455	324	410	43	4.6	5510	4330

CAL VR 1976 TOTAL 19788.32 MEAN 54.1 MAX 3150 MIN .05 CFSM .58 IN 7.94 AC-FT 39250
WTR VR 1977 TOTAL 5704.44 MEAN 18.6 MAX 959 MIN .00 CFSM .17 IN 2.29 AC-FT 11310

DES MOINES RIVER BASIN

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05486000 NORTH RIVER NEAR NORWALK, IA

LOCATION.--Lat 41°27'25", long 93°39'10", in NW1/4 SW1/4 sec.20, T.77 N., R.24 W., Warren County, Hydrologic Unit 07100008, on left bank 10 ft (3 m) downstream from bridge on county highway R57, 1.7 mi (2.7 km) southeast of Norwalk, 5.2 mi (8.4 km) upstream from Middle Creek, and 5.2 mi (10.0 km) downstream from Badger Creek.

DRAINAGE AREA.--349 mi² (904 km²).

PERIOD OF RECORD.--February 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1946. WRD IA-76-1: 1975 (P).

GAGE.--Water-stage recorder. Datum of gage is 788.45 ft (240.320 m) above mean sea level (levels by Corps of Engineers). Prior to June 12, 1945, nonrecording gage at same site and datum. Jan. 7 to Oct. 11, 1950, nonrecording gage at site 2.1 mi (3.4 km) upstream at different datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Three discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--37 years, 177 ft³/s (5.013 m³/s), 5.89 in/yr (175 mm/yr), 126,200 acre-ft/yr (158 hm³/s/yr); median of yearly mean discharges, 150 ft³/s (4.25 m³/s), 5.8 in/yr (147 mm/yr), 109,000 acre-ft/yr (134 hm³/s/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,000 ft³/s (906 m³/s) June 13, 1947, gage height, 25.3 ft (7.71 m), from floodmark, from rating curve extended above 9,100 ft³/s (258 m³/s) on basis of velocity-area studies; no flow at times during period 1954-58.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,700 ft³/s (48.1 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)
Aug. 27	0815	1,650 46.7	19.90 5.668	Sept. 2	1530	*2,860 81.0	*21.28 5.486
Aug. 29	1630	2,480 70.2	21.03 6.410				

Minimum daily discharge, 0.05 ft³/s (0.001 m³/s) Aug. 3, 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.65	.94	2.3	1.2	.84	12	37	3.9	2.9	1.2	.14	2200
2	.57	1.0	2.3	1.1	.84	12	28	3.6	2.9	.87	.05	3600
3	.57	1.1	2.3	1.1	.83	13	27	3.2	2.9	.83	.05	2000
4	.42	1.1	2.3	1.1	.83	14	30	3.4	2.9	.80	.05	621
5	.62	1.3	2.3	1.1	.82	17	44	8.1	2.3	.43	.27	575
6	.66	1.3	2.3	1.1	.85	20	49	9.4	2.0	.22	.81	250
7	.66	1.3	2.2	1.1	.90	24	43	8.8	1.3	.82	1.1	148
8	.71	1.4	2.2	1.1	.95	30	28	5.5	.80	1.2	1.2	100
9	.71	1.4	2.2	1.1	1.0	33	24	4.7	.28	.92	1.1	85
10	.70	1.8	2.2	1.1	1.1	32	23	4.4	.47	.20	1.1	78
11	.82	2.1	2.1	1.0	1.2	33	22	3.5	.52	.20	.63	135
12	.83	2.1	2.1	1.0	1.3	44	21	3.0	1.0	.15	.70	87
13	.98	2.1	2.1	.97	1.6	62	17	3.2	.88	.15	.70	72
14	.94	2.2	2.0	.96	1.8	63	15	3.3	.96	.10	.70	70
15	.98	2.2	2.0	.95	2.0	40	13	3.0	.78	.87	.57	68
16	.95	2.2	1.9	.95	2.1	27	13	3.7	1.2	6.5	.98	73
17	.83	2.2	1.9	.94	2.1	23	12	4.0	1.4	3.4	.98	78
18	.70	2.4	1.9	.92	2.3	20	11	3.6	1.5	2.3	.83	86
19	.66	2.5	2.0	.90	2.5	17	11	3.4	1.5	1.3	.63	114
20	.66	2.5	2.0	.88	2.7	17	11	3.1	.84	1.3	.63	78
21	.71	2.5	1.9	.87	3.1	15	12	2.9	.45	.84	.99	72
22	.73	2.5	1.8	.86	4.0	15	12	2.9	.30	.88	1.1	64
23	.75	2.6	1.8	.85	5.5	15	11	2.7	1.0	1.1	1.1	66
24	.90	2.7	1.8	.84	8.5	16	9.5	2.4	3.9	1.3	1.3	75
25	.83	2.9	1.8	.84	10	15	7.8	2.5	2.5	1.6	1.1	347
26	3.0	2.8	1.7	.85	11	15	6.7	2.9	2.2	1.4	1500	210
27	1.8	2.7	1.7	.85	11	15	5.9	3.2	2.3	1.1	1410	140
28	1.4	2.6	1.6	.86	12	19	5.0	3.4	2.1	.78	1780	110
29	1.2	2.5	1.4	.86	---	54	4.3	2.5	1.9	.57	3120	92
30	1.0	2.4	1.4	.85	---	128	4.0	3.2	1.6	.54	2930	84
31	.90	---	1.3	.85	---	81	---	2.9	---	.37	1380	---
TOTAL	27.84	61.44	60.8	29.95	93.66	957	557.3	121.3	47.49	34.24	12139.41	11791
MEAN	.90	2.05	1.95	.97	3.35	30.9	18.6	3.91	1.58	1.10	392	393
MAX	3.0	2.9	2.3	1.2	12	128	49	9.4	3.9	6.5	3120	3600
MIN	.42	.94	1.3	.84	.82	12	4.0	2.4	.28	.10	.05	64
CFSM	.003	.006	.006	.003	.01	.09	.05	.01	.005	.003	1.12	1.13
IN.	.00	.01	.01	.00	.01	.10	.06	.01	.01	.00	1.29	1.26
AC-FT	55	122	121	59	186	1900	1110	241	84	68	24060	23390

CAL YR 1976 TOTAL 89653.51 MEAN 190 MAX 8000 MIN .42 CFSM .54 IN 7.42 AC-FT 138200
WTR YR 1977 TOTAL 25921.43 MEAN 71.0 MAX 3600 MIN .05 CFSM .20 IN 2.76 AC-FT 51420

DES MOINES RIVER BASIN

05486490 MIDDLE RIVER NEAR INDIANOLA, IA

LOCATION.--Lat 41°28'27", long 93°35'09", in SW1/4 SE1/4 sec.35, T.77 N., R.24 W., Warren County, Hydrologic Unit 07100008, on right bank 10 ft (3 m) downstream from bridge on county highway, 0.4 mi (0.6 km) upstream from Cavitt Creek, 1.5 mi (2.4 km) upstream from bridge on U.S. Highway 69, and 4.6 mi (7.4 km) northwest of Indianola.

DRAINAGE AREA.--593 mi² (1,302 km²).

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1940 (M), 1941, 1944, 1946, 1949 (M).

GAGE.--Water-stage recorder. Datum of gage is 776.15 ft (236.571 m) above mean sea level (Corps of Engineers bench mark). Prior to June 11, 1946, June 9, 1947, to Nov. 23, 1948, and Sept. 8, 1951, to Oct. 30, 1952, nonrecording gage and June 11, 1946, to June 8, 1947 (destroyed by flood), Nov. 24, 1948, to Sept. 7, 1951, Sept. 1, 1952, to Sept. 30, 1962, water-stage recorder at site 1.0 mi (2.6 km) downstream at datum 2.81 ft (0.856 m) lower.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

COOPERATION.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--37 years, 252 ft³/s (7.137 m³/s) 5.80 in/yr (173 mm/yr), 182,600 acre-ft/yr (225 hm³/yr); median of yearly mean discharges, 240 ft³/s (6.80 m³/s) 5.5 in/yr (165 mm/yr), 174,000 acre-ft/yr (215 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,000 ft³/s (953 m³/s) June 13, 1947, gage heights: 26.40 ft (8.047 m), from floodmark, former site and datum; 28.27 ft (8.617 m), from floodmark, present site and datum; minimum daily, 0.11 ft³/s (0.003 m³/s) July 2, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,800 ft³/s (127 m³/s) and maximum ("):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)
Aug. 26	1030	12,800 362	23.04 7.023	Sept. 1	0445	5,100 144	17.14 5.224
Aug. 26	1030	6,420 182	18.85 5.745				

Minimum daily discharge, 0.11 ft³/s (0.003 m³/s) July 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.8	9.6	5.8	1.3	.96	18	43	19	5.5	.17	.45	3960
2	7.2	9.0	5.3	1.3	1.0	19	43	18	4.8	.11	.45	1020
3	6.6	10	4.9	1.2	1.0	20	47	21	4.9	.57	.59	545
4	9.0	7.2	4.7	1.2	1.0	22	48	22	4.6	.47	.65	681
5	11	7.2	4.6	1.2	1.1	25	153	43	4.0	.81	1.8	896
6	11	7.2	4.5	1.2	1.2	30	138	42	4.0	.98	2.2	373
7	11	7.2	4.5	1.1	1.2	35	108	43	4.7	2.4	4.9	278
8	11	9.6	4.4	1.1	1.3	40	92	34	4.0	1.1	2.0	209
9	11	8.4	4.4	1.1	1.4	45	67	28	4.0	1.3	1.9	175
10	11	7.8	4.4	1.1	1.5	50	67	25	4.0	1.9	1.9	150
11	11	9.0	4.3	1.1	1.7	57	57	22	3.6	1.9	1.9	166
12	11	9.6	4.3	1.0	1.9	82	52	19	4.0	1.3	1.9	142
13	16	11	4.3	1.0	2.2	129	47	17	5.0	1.6	1.9	135
14	10	13	4.2	.98	2.5	115	44	15	5.0	1.3	1.9	141
15	6.6	14	4.2	.97	2.8	76	42	14	6.1	3.1	1.9	125
16	6.0	18	4.1	.96	3.1	68	38	12	10	91	1.9	104
17	6.0	15	4.0	.95	3.3	52	33	10	7.2	16	1.9	391
18	6.0	11	3.8	.93	3.8	47	28	9.0	5.4	8.2	1.9	983
19	5.5	11	3.7	.92	4.1	43	26	7.2	4.0	3.1	1.9	279
20	6.0	11	3.5	.90	4.5	42	28	7.7	2.0	2.8	1.9	186
21	6.0	10	3.3	.90	5.0	41	36	10	1.6	2.7	1.9	167
22	5.5	11	3.1	.90	5.0	41	38	13	1.7	2.5	1.9	135
23	5.5	11	2.8	.90	7.4	41	35	9.5	4.5	1.8	1.9	119
24	8.4	12	2.6	.90	10	42	32	7.2	2.7	3.6	1.9	214
25	25	11	2.3	.90	13	44	37	5.4	1.5	3.7	1.9	618
26	17	10	2.1	.90	15	44	30	5.8	1.3	2.4	7990	305
27	12	9.6	1.9	.90	16	46	26	7.2	1.6	2.3	1210	205
28	11	8.2	1.7	.90	17	49	22	9.3	1.1	1.7	4970	140
29	8.4	7.3	1.6	.90	---	48	22	8.5	.78	1.5	1760	137
30	7.2	6.6	1.5	.92	---	45	20	7.7	.69	.43	444	121
31	9.0	---	1.4	.95	---	43	---	6.0	---	.61	1640	---
TOTAL	294.7	302.5	112.2	31.48	130.96	1499	1500	518.5	114.27	161.35	17959.35	13121
MEAN	9.51	10.1	3.62	1.02	4.68	48.4	50.0	16.7	3.81	5.20	579	437
MAX	25	18	5.8	1.3	17	129	153	43	10	91	7990	3960
MIN	5.0	6.6	1.4	.90	.96	18	20	5.8	.69	.11	.45	104
CFSM	.02	.02	.007	.002	.009	.10	.10	.03	.008	.01	1.15	.87
IN.	.02	.02	.01	.05	.01	.11	.11	.04	.01	.01	1.33	.97
AC-FT	585	600	223	62	260	2970	2980	1030	227	320	35620	26030

CAL YR 1976 TOTAL 77539.00 MEAN 212 MAX 7210 MIN 1.4 CFSM .42 IN 5.73 AC-FT 153900
WTR YR 1977 TOTAL 36746.31 MEAN 97.9 MAX 7990 MIN .11 CFSM .20 IN 2.64 AC-FT 70900

DES MOINES RIVER BASIN

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05487470 SOUTH RIVER NEAR ACKWORTH, IA

LOCATION.--Lat 41°20'14", long 93°29'10", in SE1/4 SE1/4 sec.34, T.76 N., R.23 W., Warren County, Hydrologic Unit 07100008, on right bank 15 ft (5 m) downstream from bridge on county highway, 0.5 mi (0.8 km) downstream from Otter Creek, and 2.2 mi (3.5 km) southwest of Ackworth.

DRAINAGE AREA.--480 mi² (1,191 km²).

PERIOD OF RECORD.--February 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1941, 1945 (H), 1946.

GAGE.--Water-stage recorder. Datum of gage is 769.97 ft (234.687 m) above mean sea level (levels by Corps of Engineers). Prior to June 12, 1946, nonrecording gage, June 13, 1946, to Apr. 13, 1960, water-stage recorder, and Apr. 14, 1960, to Sept. 30, 1961, nonrecording gage, all at site 4.0 mi (6.4 km) downstream at datum 8.08 ft (2.467 m) lower.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

COOPERATION.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--37 years, 239 ft³/s (6,768 m³/s), 7.06 in/yr (179 mm/yr), 173,200 acre-ft/yr (214 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,000 ft³/s (963 m³/s) June 5, 1947, gage height, 24.60 ft (7.498 m), site and datum then in use; maximum gage height, 29.07 ft (8.861 m) June 10, 1974; no flow Sept. 19 to Oct. 13, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1930 reached a stage of 24.5 ft (7.47 m), from information by local residents, discharge, about 30,000 ft³/s (850 m³/s), at site 4.0 mi (6.4 km) downstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,800 ft³/s (447 m³/s) Aug. 26, gage height, 26.99 ft (8.227 m) at 1030 hours, no other peak above base of 5,000 ft³/s (142 m³/s); minimum daily, 0.15 ft³/s (.004 m³/s) June 27, 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	7.3	1.4	1.5	1.4	16	31	6.9	4.0	.55	.40	903
2	2.9	7.3	2.0	1.4	1.4	17	39	6.5	4.0	.55	.55	340
3	3.4	6.6	2.5	1.4	1.4	18	44	10	4.0	.55	1.5	703
4	4.0	6.3	2.7	1.3	1.4	20	53	15	4.0	.40	1.7	1380
5	7.3	5.4	2.9	1.3	1.5	22	74	71	4.0	.55	2.7	288
6	6.3	5.4	3.1	1.3	1.5	21	78	40	2.7	.85	4.0	145
7	3.7	2.4	3.0	1.3	1.5	20	46	25	2.7	.85	26	90
8	3.4	3.4	2.9	1.3	1.5	20	34	15	2.1	1.0	37	59
9	3.1	4.0	2.9	1.3	1.5	19	25	12	1.7	.55	37	43
10	2.6	4.0	2.8	1.3	1.7	19	18	11	2.1	.30	66	28
11	2.6	4.2	2.7	1.2	1.8	27	14	9.8	2.5	.40	40	16
12	2.4	4.5	2.6	1.2	2.0	56	7.3	9.4	2.7	.55	14	18
13	2.4	5.4	2.5	1.2	2.2	75	8.1	8.9	2.1	.55	5.8	216
14	4.0	6.0	2.4	1.1	2.4	45	8.1	8.1	2.1	.40	2.7	184
15	2.6	5.7	2.4	1.1	2.6	19	7.3	8.1	1.7	.70	1.9	74
16	2.9	5.1	2.2	1.1	2.8	16	6.2	7.6	1.7	11	4.8	44
17	2.9	4.8	2.2	.90	3.0	12	5.1	6.5	1.2	10	3.7	1520
18	2.4	4.5	2.3	.72	3.2	9.4	5.1	6.2	.40	4.0	1.7	1110
19	4.2	4.2	2.4	.50	3.4	9.4	6.5	5.8	.40	1.5	1.7	258
20	4.0	5.4	2.5	.43	3.7	9.1	8.1	5.4	.40	.85	1.9	130
21	2.9	7.3	2.5	.58	4.5	9.1	72	4.8	.55	.30	1.9	123
22	2.4	6.9	2.4	.70	5.6	11	125	4.8	1.3	.30	1.7	83
23	3.1	5.7	2.3	.95	9.0	9.4	56	4.5	1.3	.40	1.7	74
24	5.1	5.4	2.2	1.1	12	10	33	4.2	2.0	1.7	.85	172
25	4.8	5.0	2.1	1.2	13	9.4	23	3.7	.55	2.0	1.5	180
26	5.4	4.5	2.0	1.2	14	9.1	16	3.7	.40	1.3	11900	102
27	4.6	3.5	1.9	1.2	15	9.4	12	3.7	.15	1.0	2780	62
28	4.8	2.3	1.8	1.3	15	42	7.6	3.7	.15	.85	2180	42
29	5.7	1.5	1.7	1.3	---	270	6.9	3.6	.30	.85	690	39
30	5.7	1.1	1.6	1.3	---	141	6.9	3.8	.55	.70	216	36
31	6.9	---	1.5	1.4	---	50	---	3.8	---	.40	723	---
TOTAL	121.0	145.1	72.4	35.08	130.2	1040.3	877.2	334.5	53.75	45.90	18751.70	8462
MEAN	3.90	4.84	2.34	1.13	4.65	33.6	29.2	10.8	1.79	1.48	605	282
MAX	7.3	7.3	3.1	1.5	15	270	126	71	4.0	11	11900	1520
MIN	2.4	1.1	1.4	.43	1.4	9.1	5.1	3.6	.15	.30	.40	16
CFSM	.008	.01	.005	.002	.01	.07	.06	.02	.004	.003	1.32	.61
IN	.01	.01	.01	.00	.01	.08	.07	.03	.00	.00	1.52	.68
AC-FT	240	288	144	70	258	2060	1740	653	107	91	37190	16780

CAL YR 1976 TOTAL 60248.90 MEAN 165 MAX 9200 MIN 1.1 CFSM .36 IN 4.87 AC-FT 119500
WTR YR 1977 TOTAL 30069.13 MEAN 82.4 MAX 11900 MIN .15 CFSM .18 IN 2.43 AC-FT 59640

DES MOINES RIVER BASIN

05487980 WHITE BREAST CREEK NEAR DALLAS, IA

LOCATION.--Lat 41°14'41", Long 93°16'08", in NW1/4 NW1/4 sec.3, T.74 N., R.21 W., Marion County, Hydrologic Unit 07100008, on left bank 18 ft (5 m) downstream from bridge on county highway, 0.5 mi (0.8 km) downstream from Kirk Branch, and 1.7 mi (2.7 km) northwest of Dallas.

DRAINAGE AREA.--342 mi² (886 km²).

PERIOD OF RECORD.--October 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 759.12 ft (231.380 m) above mean sea level, (Corps of Engineers bench mark).

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--15 years, 180 ft³/s (5.097 m³/s), 7.18 in/yr (182 mm/yr), 130,400 acre-ft/yr (161 hm³/yr); median of yearly mean discharges, 180 ft³/s (5.097 m³/s), 6.4 in/yr (162 mm/yr), 116,000 acre-ft/yr (143 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,430 ft³/s (267 m³/s) Oct. 11, 1973, gage height, 28.04 ft (7.937 m); minimum daily, 0.07 ft³/s (0.002 m³/s) Sept. 29, 1968.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 11, 1962, reached a stage of 28.87 ft (8.800 m), from floodmark, discharge, about 12,000 ft³/s (340 m³/s). Flood of June 8, 1947, may have been slightly higher.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,140 ft³/s (202 m³/s) Aug. 25, gage height, 22.73 ft (6.928 m) at 1430 hours, no other peak above base of 3,000 ft³/s (85.0 m³/s); minimum daily, 0.20 ft³/s (0.006 m³/s) Jan. 20 and June 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	1.6	.85	.67	.63	9.4	47	6.6	4.0	5.0	17	418
2	1.7	1.4	.98	.55	.64	8.7	37	8.9	3.0	4.5	16	448
3	1.7	1.3	1.1	.54	.66	13	37	14	2.9	6.3	15	1350
4	1.4	1.2	1.2	.53	.67	17	64	14	4.0	5.9	15	791
5	1.9	1.3	1.2	.52	.68	18	164	32	6.0	8.3	16	305
6	1.7	1.2	1.2	.52	.69	15	172	8.9	2.0	5.0	20	137
7	1.7	1.2	1.2	.52	.70	14	98	4.5	1.7	6.2	869	85
8	1.6	1.2	1.2	.52	.70	16	42	4.2	6.9	7.2	169	59
9	1.6	1.0	1.2	.53	.71	15	31	6.9	9.3	7.8	368	46
10	1.4	1.2	1.2	.53	1.3	11	24	12	11	7.8	174	35
11	1.5	1.4	1.1	.52	2.8	14	18	18	11	8.1	55	29
12	1.3	1.6	1.1	.51	6.5	90	14	17	9.3	10	19	49
13	1.2	1.6	1.0	.51	17	127	11	19	10	10	6.9	314
14	1.0	1.5	1.0	.50	26	85	9.3	22	10	9.7	8.1	176
15	1.2	1.5	1.0	.48	23	34	7.8	22	9.7	10	8.1	101
16	1.1	1.5	1.0	.44	21	18	7.2	22	8.9	15	56	65
17	1.3	1.5	1.0	.42	26	7.8	7.2	22	8.5	24	68	105
18	1.4	1.5	1.0	.31	16	8.3	7.8	18	7.8	24	17	124
19	1.7	1.5	1.0	.25	14	4.6	8.1	16	4.7	22	7.5	124
20	1.7	1.5	1.0	.20	11	3.7	9.3	20	1.9	22	5.9	109
21	1.9	1.5	.98	.25	15	5.6	167	22	.74	21	10	90
22	1.4	1.5	.95	.34	20	8.1	420	37	.20	21	22	65
23	1.5	1.5	.90	.43	31	9.7	139	17	.74	21	33	62
24	1.5	1.5	.86	.50	36	9.7	78	9.7	1.5	21	39	136
25	1.4	1.5	.83	.55	35	6.6	45	7.2	1.5	22	44	108
26	1.4	1.5	.77	.57	30	7.2	29	5.3	1.5	21	4230	82
27	1.3	1.4	.73	.58	18	7.6	19	5.6	1.5	21	878	45
28	1.3	1.0	.67	.59	12	48	14	6.6	2.7	20	1060	32
29	1.4	.70	.64	.60	---	446	9.7	8.9	4.7	19	396	28
30	1.5	.68	.61	.61	---	275	7.8	8.0	6.2	17	198	27
31	1.5	---	.59	.62	---	92	---	6.0	---	17	398	---
TOTAL	45.9	40.38	30.06	18.12	360.68	1439.0	1730.2	435.3	153.88	435.8	9248.5	5535
MEAN	1.48	1.35	.97	.49	12.9	46.4	57.7	14.0	5.13	14.1	298	185
MAX	1.9	1.6	1.2	.62	.36	446	420	37	11	24	4230	1350
MIN	1.0	.68	.59	.20	.63	3.7	7.2	4.2	.20	4.5	5.9	27
CFSM	.004	.004	.003	.001	.04	.14	.17	.04	.02	.04	.87	.54
IN.	.00	.00	.00	.00	.64	.18	.19	.05	.02	.05	1.01	.60
AC-FT	91	80	50	30	715	2850	3430	863	305	864	18340	10980

CAL YR 1976 TOTAL 55600.44 MEAN 152 MAX 7580 MIN .89 CFSM .44 IN 6.05 AC-FT 110300
WTR YR 1977 TOTAL 19469.82 MEAN 53.3 MAX 4730 MIN .20 CFSM .16 IN 2.12 AC-FT 38620

05488100 LAKE RED ROCK NEAR PELLA, IA

LOCATION.--Lat 41°22'11", long 92°58'48", in NE1/4 NW1/4 sec.19, T.7S N., R.12 W., Marion County, Hydrologic Unit 07100008, at outlet works near right end of Red Rock Dam on Des Moines River, 1.4 mi (2.3 km) upstream from Lake Creek, 4.5 mi (7.2 km) southwest of Pella and at mile 142.3 (229.0 km).

DRAINAGE AREA.--12,323 mi^2 (31,917 km^2).

PERIOD OF RECORD.--March 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam completed in 1959. Storage began in March 1959. Releases controlled through 14 concrete conduits extending through the concrete ogee spillway section into the stilling basin. Inlet invert elevation at 690 ft (210 m) above mean sea level. Maximum design discharge through the conduits is 37,600 ft^3/s (1,060 m^3/s) but normal flood control operation limits maximum outflow to 30,000 ft^3/s (850 m^3/s). Spillway section consists of 5 Tainter gates, 41 ft (12 m) wide and 48 ft (14 m) high, on concrete ogee crest at elevation 735 ft (224 m). The storage capacity of the reservoir at full flood-control pool level, 780 ft (238 m), is 1,830,000 acre-ft (2,280 hm^3) and that of conservation pool level, 725 feet (221 m), is 90,000 acre-feet (111 hm^3). Reservoir is used for flood control, low-flow augmentation, conservation and recreation. Normal operation will maintain an elevation of 725 ft (221 m) with minimum release of 300 ft^3/s (8.50 m^3/s) and maximum release of 30,000 ft^3/s (850 m^3/s) during the non-growing season, providing discharges at Ottumwa and Keosauqua do not exceed 30,000 ft^3/s (850 m^3/s) and 35,000 ft^3/s (991 m^3/s) respectively.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,700,000 acre-ft (2,100 hm^3) May 14, 1973, elevation, 777.95 ft (237.119 m); minimum daily contents, 58,000 acre-ft (71.5 hm^3) Feb. 16, 1977; elevation, 719.68 ft (219.359 m) Feb. 17, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 189,000 acre-ft (233 hm^3) Aug. 29, elevation, 733.10 ft (223.449 m); minimum daily contents, 58,000 acre-ft (71.5 hm^3) Feb. 16, minimum observed elevation, 719.68 ft (219.359 m) Feb. 17.

Capacity table (elevation, in feet, and contents, in acre-feet)

722	66,200	740	292,000	760	825,000
725	90,000	745	392,000	765	1,020,000
730	142,000	750	517,000	770	1,250,000
735	208,400	755	653,000		

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90000	88900	88400	78800	64100	68200	95400	97800	102000	102000	100000	176000
2	90000	89200	88100	78400	63700	65200	98800	97900	102000	102000	100000	166000
3	89900	88900	87800	78100	62900	70300	98600	98100	102000	101000	100000	161000
4	90500	89900	87600	77700	62800	71500	98400	98500	102000	101000	100000	164000
5	91000	89900	87300	77300	62500	72600	98100	99200	102000	101000	100000	161000
6	91000	89800	87000	76900	62100	73800	97800	99800	102000	101000	101000	156000
7	91000	89700	86700	76600	61700	75000	97300	100000	102000	101000	103000	148000
8	90800	89600	86400	76200	61200	76200	96700	101000	102000	101000	104000	142000
9	90600	89600	86100	75800	60700	77700	96100	101000	102000	100000	105000	141000
10	90500	89500	85800	75400	60300	79600	95800	101000	102000	100000	106000	139000
11	90400	89400	85500	75000	59800	82700	95700	100000	102000	99900	106000	136000
12	90300	89300	85200	74500	59400	86000	95800	100000	102000	99700	106000	135000
13	90100	89200	85000	74100	59000	89300	95900	99800	101000	99400	106000	138000
14	89900	89000	84700	73600	58600	92800	95900	99500	101000	99200	106000	135000
15	89700	88900	84400	73000	58300	96300	95800	99100	101000	99200	106000	135000
16	89500	88800	84100	72500	58000	99900	95600	99000	101000	99800	107000	136000
17	89400	88700	83800	72000	58100	103000	95300	99000	101000	100000	107000	140000
18	89200	88700	83500	71400	58300	104000	95200	99100	101000	100000	107000	148000
19	89000	88700	83200	70900	58700	104000	95400	99200	101000	101000	108000	148000
20	88900	88800	82900	70400	59400	103000	96100	99300	101000	101000	109000	145000
21	88800	88900	82600	69800	60200	101000	97100	99500	100000	101000	111000	143000
22	88600	88900	82200	69300	61100	99700	98000	99900	100000	101000	112000	142000
23	88600	89000	81800	68800	62100	98900	97900	100000	101000	100000	112000	141000
24	88400	89000	81500	68200	63200	98800	98400	101000	102000	100000	113000	141000
25	88300	89000	81200	67700	64200	99400	98500	101000	102000	100000	113000	143000
26	88200	89000	80800	67200	65200	100000	98500	101000	102000	100000	113000	145000
27	88200	89000	80500	66600	66300	101000	98300	102000	102000	99900	113000	145000
28	88200	89000	80200	66100	67200	102000	98200	102000	102000	99800	117000	144000
29	88300	88900	79800	65500	---	102000	98100	102000	102000	99700	119000	143000
30	88400	88600	79500	65000	---	102000	98000	102000	102000	99800	118000	141000
31	88500	---	79200	64500	---	100000	---	103000	---	100000	176000	---
MAX	91000	89900	88400	78800	67200	104000	99400	103000	102000	102000	119000	176000
MIN	88200	88600	79200	64500	58000	68200	95200	97800	100000	99200	100000	135000
+	724.74	724.65	723.50	720.92	720.99	725.38	725.35	725.80	725.64	725.19	731.77	728.80
*	-1,500	+300	-5,400	-14,700	+2,700	+32,800	-2,000	+5,000	-1,000	-2,000	+78,000	-35,000

CAL YR 1976.....MAX 504,000 MIN 77,400 **10,000
WTR YR 1977.....MAX 189,000 MIN 58,000 **51,000

* Elevation, in feet, at end of month.

* Change in contents, in acre-feet.

05488500 DES MOINES RIVER NEAR TRACY, IA

LOCATION.--Lat 41°16'53", long 92°51'34", in NW1/4 SE1/4 sec.19, T.78 N., R.17 W., Mahaska County, Hydrologic Unit 07100009, on right bank 280 ft (78 m) upstream from abandoned Bellefontaine Bridge, 0.5 mi (0.8 km) downstream from bridge on State Highway 92, 0.8 mi (1.3 km) east of Tracy, 3.1 mi (5.0 km) upstream from Cedar Creek, 8.4 mi (10.3 km) downstream from English Creek, and at mile 130.4 (209.8 km).

DRAINAGE AREA.--12,479 mi² (32,321 km²).

PERIOD OF RECORD.--March 1920 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1920 (M), 1922 (M), 1933.

GAGE.--Water-stage recorder. Datum of gage is 670.91 ft (204.493 m) above mean sea level. Prior to June 26, 1940, and June 30, 1952, to Nov. 4, 1960, nonrecording gage, and June 27, 1940, to June 29, 1952, water-stage recorder, at site 280 ft (78 m) downstream at same datum.

REMARKS.--Records good except those for winter period, which are fair. Flow regulated by Lake Red Rock (station 05488100) 11.9 mi (19.1 km) upstream, since March 12, 1969. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

COOPERATION.--Thirteen discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--57 years, 4,575 ft³/s (129.6 m³/s), 4.98 in/yr (126 mm/yr), 3,315,000 acre-ft/yr (4,087 km³/yr); median of yearly mean discharges, 3,950 ft³/s (112 m³/s), 4.3 in/yr (109 mm/yr), 2,862,000 acre-ft/yr (3,530 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 155,000 ft³/s (4,390 m³/s), June 14, 1947, gage height, 26.5 ft (8.08 m); minimum daily, 40 ft³/s (1.13 m³/s) Jan. 29 to Feb. 1, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1851, that of June 14, 1947. Flood of May 31, 1903, reached a stage of about 25 ft (7 m), discharge, about 130,000 ft³/s (3,680 m³/s). Minimum daily discharge since at least 1910, that of Jan. 29 to Feb. 1, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,300 ft³/s (405 m³/s) Sept. 3, gage height, 10.03 ft (3.057 m); minimum daily, 185 ft³/s (4.67 m³/s) Feb. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	320	329	355	310	300	220	1410	511	304	218	217	9970
2	311	339	350	305	305	222	1380	511	317	219	218	14000
3	311	329	385	285	310	236	1380	514	315	219	219	12200
4	311	329	300	285	310	231	1380	525	322	219	218	9930
5	377	329	290	285	300	224	1360	559	318	218	218	11200
6	320	339	300	290	310	228	1260	517	319	218	218	7980
7	311	329	360	290	315	230	1370	506	321	218	219	6920
8	311	329	360	295	315	230	1370	509	325	218	797	5890
9	311	339	360	295	315	237	1370	503	325	218	843	4100
10	311	339	360	300	320	241	1240	505	332	217	440	4040
11	311	339	400	350	315	287	1000	505	329	217	296	4010
12	311	339	405	380	310	300	888	506	323	214	225	3480
13	311	329	410	340	290	260	695	506	326	210	218	2680
14	311	329	420	330	305	258	681	511	325	210	218	2740
15	311	329	410	300	300	269	671	511	329	213	218	2370
16	311	329	395	270	310	246	661	464	325	350	223	1990
17	311	329	375	280	315	262	651	351	321	221	220	2110
18	311	320	350	290	270	794	613	353	224	215	228	3320
19	320	329	290	295	175	1760	525	352	205	213	259	3480
20	320	329	325	310	185	1770	462	359	200	209	265	3350
21	320	329	350	305	238	1790	405	353	217	209	261	3050
22	320	329	375	305	242	1700	399	352	218	209	255	2020
23	320	329	350	310	269	1200	470	351	225	209	265	2010
24	320	329	360	310	245	1150	643	349	225	217	320	2020
25	320	329	340	315	221	740	544	314	219	214	319	2040
26	320	329	325	310	224	727	651	307	218	209	971	2140
27	320	380	310	310	220	832	655	304	218	210	8250	2700
28	311	460	270	320	218	1080	615	311	222	218	10900	2700
29	329	390	240	295	---	1520	521	314	218	218	11200	2700
30	339	380	235	295	---	1970	521	319	222	216	12600	2700
31	329	---	300	290	---	1910	---	317	---	234	11300	---
TOTAL	9870	10215	10655	9450	7732	23124	25983	13179	8317	6814	62617	139810
MEAN	318	341	344	305	276	746	866	425	277	220	2020	4660
MAX	377	460	420	380	320	1970	1410	559	332	350	12600	14000
MIN	311	320	225	270	165	220	399	304	200	209	217	1990
AC-FT	19580	20260	21130	18740	15340	45870	51560	26140	16500	13520	124200	277300

CAL YR 1976 TOTAL 1250870 MEAN 3418 MAX 19000 MIN 235 AC-FT 2481000
WTR YR 1977 TOTAL 327776 MEAN 898 MAX 14000 MIN 165 AC-FT 650100

05489000 CEDAR CREEK NEAR BUSSEY, IA

LOCATION.--Lat 41°13'09", long 92°54'38", at SW corner sec.11, T.74 N., R.18 W., Marion County, Hydrologic Unit 07100009, on left bank 10 ft (3 m) downstream from bridge on State Highway 156, 0.6 mi (1.3 km) downstream from North Cedar Creek, 1.6 mi (2.6 km) northwest of Bussey, 3.0 mi (4.8 km) upstream from Honey Creek, and 9.9 mi (14.3 km) upstream from mouth.

DRAINAGE AREA.--374 mi² (969 km²).

PERIOD OF RECORD.--October 1947 to current year.

REVISED RECORDS.--WSP 143B: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 692.15 ft (207.919 m) above mean sea level (levels by Corps of Engineers). Prior to Feb. 21, 1949, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

COOPERATION.--Three discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--30 years, 193 ft³/s (5.465 m³/s), 7.01 in/yr (178 mm/yr), 139,800 acre-ft/yr (172 hm³/yr); median of yearly mean discharges, 170 ft³/s (4.81 m³/s), 6.2 in/yr (157 mm/yr), 123,000 acre-ft/yr (152 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,300 ft³/s (830 m³/s) May 9, 1950, gage height, 27.50 ft (8.382 m); maximum gage height, 28.06 ft (8.553 m) July 2, 1958; no flow Sept. 6-20, 1955, Oct. 11, 12, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1946 reached a stage of 28.45 ft (8.672 m) on upstream side and 29.05 ft (8.950 m) on downstream side of bridge, levels to floodmarks by Corps of Engineers, discharge, 31,600 ft³/s (892 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (=):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)
Aug. 9	0645	8.870 195	21.37 6.514	Sept. 18	0145	4.190 119	17.98 5.480

Minimum daily discharge, 0.15 ft³/s (0.004 m³/s) Jan. 24, 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	3.6	1.8	1.2	.44	4.6	50	9.8	4.6	.84	1.8	928
2	2.1	3.4	2.2	1.1	.60	5.0	42	12	3.1	.67	2.7	748
3	1.9	3.9	2.0	.92	.50	5.4	42	12	3.0	.59	3.1	807
4	2.0	3.0	2.0	.76	.29	9.6	51	15	3.3	.50	1.2	658
5	38	2.5	2.0	.57	.23	12	166	60	5.1	.50	.84	243
6	27	3.0	2.2	.47	.29	10	111	42	5.9	.42	23	142
7	16	3.1	2.0	.36	.46	9.8	83	32	2.2	.36	2800	107
8	8.3	2.6	1.8	.29	.78	13	47	20	2.4	.50	6270	95
9	5.1	2.4	1.7	.33	.05	15	35	15	2.1	.59	3890	71
10	4.2	2.5	2.0	.24	1.3	17	29	11	1.8	.30	1080	61
11	3.6	2.4	1.7	.29	2.0	28	28	8.7	1.8	.24	196	45
12	3.0	2.5	1.7	.30	12	122	20	8.9	15	.42	122	169
13	2.8	2.4	1.5	.29	19	134	19	6.1	8.0	.50	84	2280
14	2.4	2.2	1.6	.26	13	65	17	5.0	3.3	.42	57	1050
15	2.1	2.6	1.8	.29	8.6	41	18	4.5	1.9	.42	48	243
16	2.0	3.0	1.9	.58	7.2	28	17	4.5	1.7	102	675	162
17	1.8	2.8	2.2	1.1	4.2	20	15	5.4	1.5	129	443	1540
18	1.8	3.3	2.2	.46	3.0	17	14	5.0	1.5	35	120	2530
19	2.1	3.4	2.8	.31	2.3	15	13	4.7	1.4	17	69	360
20	2.2	3.1	3.3	1.6	1.7	15	14	3.9	1.1	7.3	48	192
21	2.1	3.0	2.0	.32	1.7	17	27	5.5	1.1	3.3	71	144
22	2.1	3.0	1.7	.16	1.8	25	56	5.7	1.2	2.0	40	126
23	2.8	3.0	1.7	.16	4.8	44	41	9.0	1.0	1.6	29	109
24	2.8	3.1	1.6	.15	15	59	40	10	1.3	1.6	23	351
25	3.3	3.6	1.7	.15	13	46	32	8.6	1.2	2.2	18	204
26	2.8	4.2	1.9	.17	8.9	31	24	6.0	1.2	1.6	1330	113
27	3.1	3.3	1.9	.17	6.0	25	18	4.8	1.6	1.1	1320	87
28	2.8	2.7	2.5	.16	6.9	89	17	3.9	1.3	.67	350	72
29	2.2	2.4	2.1	.22	---	578	12	3.6	.92	.59	558	64
30	3.0	2.0	1.6	.26	---	175	11	3.2	.84	.75	158	81
31	4.2	---	1.3	.38	---	76	---	4.2	---	1.2	313	---
TOTAL	180.9	87.8	60.4	14.02	137.64	1750.4	1091	349.0	82.26	313.99	20136.64	13452
MEAN	5.19	2.93	1.95	.45	4.92	56.6	36.4	11.3	2.74	10.1	650	448
MAX	38	4.2	3.3	1.6	19	578	169	60	15	129	6270	2530
MIN	1.9	2.0	1.3	.15	.23	4.6	11	3.2	.84	.24	.84	45
CFSM	.01	.008	.005	.001	.01	.15	.10	.03	.007	.03	1.74	1.20
IN.	.02	.01	.01	.00	.01	.17	.11	.03	.01	.03	2.00	1.34
AC-FT	319	174	120	28	273	3470	2160	692	163	623	39940	25680

CAL	VR	1976	TOTAL	64946.80	MEAN	177	MAX	6830	MIN	1.3	CFSM	.47	IN	6.46	AC-FT	128600
WTR	VR	1977	TOTAL	37635.96	MEAN	103	MAX	6270	MIN	.15	CFSM	.28	IN	3.74	AC-FT	74650

DES MOINES RIVER BASIN

05489190 MUCHAKINOCK CREEK NEAR EDDYVILLE, IA

LOCATION.--Lat. 41°12'04", long 92°38'24", in SW1/4 NW1/4 sec.19, T.74 N., R.15 W., Mahaska County, Hydrologic Unit 07100009, on left bank 20 ft (6.1 m) downstream from bridge on state highway 137, 3.0 mi (4.8 km) north of Eddyville and 4.0 mi (6.4 km) upstream from mouth.

DRAINAGE AREA.--70.2 mi² (181.8 km²).

PERIOD OF RECORD.--July 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 654.4 ft (202.51 m) above mean sea level.

REMARKS.--Records fair except those for winter period, which are poor. Several observations of water temperature were made during the year.

EXTREMES FOR CURRENT PERIOD.--July to September 1975: Maximum discharge during period, 162 ft³/s (4.59 m³/s), Aug. 29, gage height, 6.35 ft (1.935 m); no peak above base of 1,000 ft³/s (28.3 m³/s); minimum daily, 0.33 ft³/s (0.009 m³/s) Aug. 9, 9.

Water year 1976: Peak discharges above base of 1,000 ft³/s (28.3 m³/s): 1,110 ft³/s (31.4 m³/s) Nov. 30, gage height, 13.36 ft (4.072 m) at 1545 hours; 8,000 ft³/s (227 m³/s) Apr. 24, gage height, 18.10 ft (5.517 m) at 1000 hours; 1,060 ft³/s (30.0 m³/s) June 29, gage height, 13.19 ft (4.020 m) at 0815 hours; minimum daily, 0.36 ft³/s (0.010 m³/s) Nov. 13.

Water year 1977: Maximum discharge, 332 ft³/s (9.40 m³/s) July 16, gage height 9.19 ft (2.801 m); no peak above base of 1,000 ft³/s (28.3 m³/s); minimum daily, 0.13 ft³/s (0.004 m³/s) Jan. 8, 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1										28	.71	6.2
2										14	.71	3.0
3										11	.80	2.0
4										9.6	.71	3.0
5										8.9	.55	35
6										8.0	.43	28
7										7.2	.43	21
8										6.0	.33	14
9										5.0	.33	12
10										4.4	3.9	16
11										4.0	.71	21
12										3.6	.63	10
13										3.3	13	6.7
14										3.1	6.3	4.4
15										2.9	1.0	3.0
16										2.7	15	3.9
17										2.4	13	3.9
18										2.2	7.9	3.9
19										2.1	11	3.9
20										2.0	3.5	3.0
21										1.9	2.0	2.5
22										1.8	.71	1.5
23										1.7	.63	1.0
24										1.6	.43	.80
25										1.5	14	.92
26										2.0	8.9	.92
27										1.2	1.2	.80
28										.92	2.5	3.5
29										.80	89	46
30										.80	28	18
31										.71	12	---
TOTAL	---	---	---	---	---	---	---	---	---	147.53	209.31	279.84
MEAN	---	---	---	---	---	---	---	---	---	4.76	6.75	9.33
MAX	---	---	---	---	---	---	---	---	---	28	59	46
MIN	---	---	---	---	---	---	---	---	---	.71	.33	.80
CFSM	---	---	---	---	---	---	---	---	---	.07	.10	.13
IN.	---	---	---	---	---	---	---	---	---	.08	.11	.15
AC-FT	---	---	---	---	---	---	---	---	---	293	415	555

DES MOINES RIVER BASIN

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08499190 MUCHAKINOCK CREEK NEAR EDDYVILLE, IA--CONTINUED

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1976											
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
1	8.1	9.1	264	13	12	39	44	86	33	57	4.9
2	4.0	12	78	18	4.9	40	39	76	29	44	8.1
3	2.5	14	55	14	5.9	37	36	63	27	34	7.1
4	2.0	6.8	47	10	6.7	236	32	56	22	30	7.1
5	1.2	2.4	44	9.1	1.4	427	30	82	20	27	7.1
6	.97	1.9	39	11	4.1	152	31	66	19	25	7.1
7	1.1	1.8	33	12	5.0	107	27	50	18	24	7.1
8	.91	4.3	33	12	8.6	91	23	45	17	22	7.1
9	.83	6.6	30	13	13	70	22	45	16	19	7.1
10	.82	11	27	15	18	64	22	44	320	16	4.6
11	.89	5.2	26	16	16	59	24	42	197	13	2.3
12	.72	.44	23	17	12	46	20	40	65	11	3.4
13	.57	.36	23	20	12	61	21	44	75	10	6.4
14	.88	.45	49	26	10	82	22	45	440	14	4.0
15	.76	.71	49	20	7.9	50	23	49	280	46	6.9
16	.71	2.0	38	19	15	44	25	209	102	13	4.7
17	1.2	2.8	42	14	21	40	38	151	69	8.0	2.9
18	2.7	3.4	29	12	38	41	67	90	52	6.9	2.9
19	4.0	3.7	31	15	26	40	89	64	42	5.9	2.3
20	4.6	7.1	35	15	20	34	72	54	37	6.1	1.9
21	4.9	9.9	25	16	32	31	368	43	33	12	1.8
22	7.0	8.3	22	16	34	27	194	38	29	9.1	1.6
23	7.2	4.9	22	17	43	24	229	36	25	7.8	1.4
24	7.9	4.9	20	18	50	29	3730	35	24	7.1	1.5
25	9.0	6.0	20	16	68	28	1010	31	23	6.3	1.9
26	8.3	6.9	19	13	56	29	323	28	19	5.9	1.4
27	7.2	7.9	16	9.9	49	39	217	25	18	7.4	1.3
28	7.0	7.8	14	14	45	33	185	25	596	18	1.3
29	7.6	270	11	18	41	32	119	97	692	11	1.6
30	6.7	941	12	19	---	64	102	67	84	6.9	1.8
31	6.1	---	13	15	---	58	---	41	---	5.5	1.4
TOTAL	117.36	1367.66	1190	469.0	676.5	2126	7151	1847	3413	528.0	118.9
MEAN	3.79	45.5	38.4	15.1	23.3	69.6	238	59.6	114	17.0	3.83
MAX	9.0	941	264	26	69	427	3730	208	692	57	7.1
MIN	.67	.36	11	8.1	1.4	27	20	25	16	5.6	1.3
CFSM	.05	.65	.55	.22	.33	.98	3.39	.85	1.62	.24	.05
IN	.06	.72	.63	.25	.35	1.13	3.79	.98	1.81	.28	.05
AC-FT	223	2790	2360	928	1340	4220	14180	3660	6770	1050	236

WTR YR 1976 TOTAL 19053.15 MEAN 52.1 MAX 3730 MIN .36 CFSM .74 IN 10.10 AC-FT 37790

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977											
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
1	.65	4.0	1.0	.90	.49	1.2	7.3	2.6	1.5	.80	2.8
2	.93	3.1	1.0	.94	.60	.96	7.0	5.8	1.4	.84	1.7
3	1.1	2.8	1.0	.60	1.0	.92	6.6	3.4	1.1	.41	1.1
4	1.9	2.1	1.0	.44	.26	1.0	9.4	9.8	1.2	.36	.74
5	26	1.6	1.1	.31	.29	1.0	12	76	1.9	.32	.73
6	14	1.5	1.1	.23	.69	.76	8.0	19	1.1	.29	1.1
7	4.3	1.4	1.0	.15	.92	.66	6.3	12	.79	.22	1.5
8	2.9	1.7	.94	.13	1.1	.60	5.1	8.0	.83	.30	3.2
9	2.3	2.3	.90	.13	1.2	.90	6.2	6.2	.94	.22	12
10	2.1	2.2	1.0	.35	.60	1.3	5.5	5.5	.95	.20	6.5
11	2.1	2.2	1.1	.54	.48	33	5.2	4.8	.82	.17	2.1
12	1.8	2.1	1.2	.74	.82	65	4.7	4.0	.87	.15	1.2
13	1.5	2.0	1.3	.81	.69	15	4.4	3.9	.91	.16	.98
14	1.6	2.0	1.6	.80	1.7	8.2	3.6	3.4	.75	.20	.79
15	1.8	1.9	2.5	.70	1.8	5.4	3.3	4.0	.70	4.9	.71
16	1.8	1.9	2.9	.89	1.8	4.8	3.1	4.0	.74	.93	3.7
17	1.4	1.9	2.9	.60	1.9	4.0	3.1	3.8	.71	12	3.1
18	1.4	1.8	2.3	.40	1.9	3.3	2.7	3.1	.66	3.7	1.8
19	1.9	1.8	1.6	.54	2.0	2.9	3.2	3.1	.58	1.4	.89
20	1.6	1.7	1.2	.49	2.0	3.1	4.8	3.8	.80	1.6	.63
21	2.2	1.6	.82	.82	2.1	3.9	12	4.8	.53	.95	60
22	2.1	1.6	.92	.82	2.4	8.3	7.2	5.0	.93	1.8	19
23	2.1	1.6	.95	.60	2.8	8.9	5.9	5.8	.95	1.2	7.5
24	2.2	1.7	.52	.71	2.7	4.8	4.3	2.7	.74	2.8	2.7
25	2.2	2.0	.65	.78	2.1	3.5	3.8	2.3	1.1	2.4	1.4
26	2.3	2.2	.54	.59	1.8	3.1	3.6	2.0	.89	1.4	39
27	2.3	1.7	.60	.73	1.7	4.0	3.7	1.9	.87	.95	17
28	2.3	1.5	.50	.71	1.7	43	3.5	2.0	.50	.73	41
29	2.3	1.3	.42	.60	---	89	3.4	1.8	.44	.66	32
30	2.8	1.1	.75	.49	---	15	2.8	1.4	.40	1.7	9.1
31	2.9	---	1.1	.40	---	8.7	---	1.4	---	9.4	7.3
TOTAL	98.78	58.3	36.33	17.05	39.09	313.99	159.5	213.8	25.20	144.03	296.77
MEAN	3.19	1.94	1.17	.85	1.40	10.1	5.32	6.90	.84	4.85	9.57
MAX	26	4.9	2.9	.94	2.8	85	12	78	1.9	93	60
MIN	.65	1.1	.42	.13	.26	.60	2.7	1.4	.40	.15	.63
CFSM	.08	.03	.02	.009	.02	.14	.08	.10	.01	.07	.14
IN	.05	.03	.02	.01	.02	.17	.08	.11	.01	.08	.15
AC-FT	195	116	72	34	78	623	317	424	80	285	899

CAL YR 1976 TOTAL 16576.54 MEAN 48.3 MAX 3730 MIN .42 CFSM .85 IN 8.78 AC-FT 32880
WTR YR 1977 TOTAL 1744.64 MEAN 4.78 MAX 93 MIN .13 CFSM .07 IN .92 AC-FT 3460

DES MOINES RIVER BASIN

05499500 DES MOINES RIVER AT OTTUMWA, IA

LOCATION.--Lat 41°00'39", long 92°24'40", in SE1/4 NE1/4 sec.25, T.72 N., R.14 W., Wapello County, Hydrologic Unit 07100009, on right bank 15 ft (4 m) downstream from Vabash Railroad Bridge at Ottumwa, 0.4 mi (0.6 km) downstream from Ottumwa powerplant, 8.5 mi (10.6 km) upstream from Village Creek, 9.5 mi (15.3 km) downstream from South Avery Creek, and at mile 94.1 (151.4 km).

DRAINAGE AREA.--13,374 mi² (34,638 km²).

PERIOD OF RECORD.--March 1917 to current year (published as "at Eldon" October 1930 to March 1935). Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 525: 1917-20. WSP 1308: 1917-23 (M), 1925-27 (M), 1931. WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 822.00 ft (189.585 m) above mean sea level. Prior to Sept. 30, 1930, nonrecording gages at Market Street Bridge 1,700 ft (518 m) upstream at datum 0.83 ft (0.25 m) higher. Oct. 1, 1930, to Mar. 31, 1935, nonrecording gage at Eldon 15 mi (24.1 km) downstream at different datum. Apr. 1, 1935, to Oct. 23, 1963, water-stage recorder at site 1,100 ft (335 m) downstream at Vine Street Bridge at datum 0.77 ft (0.23 m) higher.

REMARKS.--Records good except those for winter period, which are fair. Prior to Dec. 12, 1959, and since Nov. 30, 1960, diurnal fluctuation at low flow caused by powerplant above station. Flow regulated by Lake Red Rock (station 05488100) 48.2 mi (77.6 km) upstream, since March 12, 1959. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

COOPERATION.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--60 years, 4,999 ft³/s (142 m³/s), 5.08 in/yr (129 mm/yr), 3,822,000 acre-ft/yr (4,470 km³/yr); median of yearly mean discharges, 4,160 ft³/s (118 m³/s), 4.2 in/yr (107 mm/yr), 3,010,000 acre-ft/yr (3,710 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 135,000 ft³/s (3,820 m³/s) June 7, 1947, gage height, 28.2 ft (8.6 m), site and datum then in use; minimum daily, 30 ft³/s (0.85 m³/s) Jan. 27-29, 31, Feb. 2, 3, 5-7, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1850, that of June 7, 1947. Flood of May 31, 1903, reached a stage of 19.4 ft (5.9 m), former site and datum at Vine Street Bridge or about 22 ft (6.7 m) at Market Street Bridge, from information by Corps of Engineers and U.S. Weather Bureau, discharge about 140,000 ft³/s (3,960 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,400 ft³/s (464 m³/s) Sept. 2, gage height, 6.72 ft (2.04 m); minimum daily, 129 ft³/s (3.65 m³/s) Nov. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	278	396	363	332	340	260	1970	557	328	208	203	10800
2	275	385	407	278	335	276	1530	557	305	192	298	14200
3	293	342	276	270	330	370	1440	584	313	186	187	15200
4	281	259	267	300	310	228	1470	770	347	184	208	11200
5	567	353	374	185	290	350	1790	1920	341	201	214	12600
6	387	374	396	185	295	283	1640	654	348	274	293	10300
7	347	407	637	510	295	276	1490	570	253	157	9110	7890
8	317	374	303	280	300	279	1520	557	317	190	6210	7580
9	408	322	285	430	310	285	1470	557	328	220	7670	5280
10	218	312	353	325	260	296	1460	479	308	178	3800	4490
11	355	342	555	310	250	557	1180	499	338	166	1590	4410
12	337	332	294	285	415	854	907	547	344	184	561	4970
13	262	332	294	275	280	445	823	531	342	188	387	7480
14	370	332	294	320	315	463	597	560	342	188	364	6250
15	342	342	312	270	260	418	640	569	340	190	351	3750
16	326	353	342	300	260	289	649	603	310	554	563	2710
17	332	332	342	240	260	289	689	538	299	555	917	3980
18	350	353	322	210	250	352	648	381	299	367	668	6410
19	385	353	342	295	270	842	587	403	291	224	341	5570
20	391	312	555	300	290	1770	584	456	199	232	336	4100
21	314	322	905	320	312	2000	584	392	199	215	649	3900
22	303	322	154	305	259	1960	518	380	200	259	392	3030
23	329	322	396	300	461	1790	531	377	208	133	312	2230
24	361	322	363	285	703	1180	557	380	278	326	281	2470
25	385	342	322	270	432	1100	612	375	235	217	252	2730
26	514	342	312	265	408	717	696	376	202	195	1170	2350
27	503	322	322	260	407	710	584	237	195	155	5690	2550
28	385	242	478	295	281	1940	568	381	192	197	11600	3020
29	363	129	332	290	---	2520	518	364	226	201	11900	2940
30	342	226	430	260	---	2670	505	286	237	204	12800	2940
31	363	---	491	280	---	2370	---	255	---	462	13000	---
TOTAL	10941	9798	11818	8998	9178	27816	28857	16075	8468	7362	92313	177320
MEAN	353	327	381	290	328	891	962	519	282	238	2978	5911
MAX	567	407	905	510	703	2670	1970	1920	348	655	13000	15200
MIN	218	129	164	185	250	228	505	237	192	133	187	2230
AC-FT	21700	19430	23440	17850	18200	54780	57240	31860	15800	14640	183100	351700

CAL YR 1976 TOTAL 1448009 MEAN 3956 MAX 35200 MIN 129 AC-FT 2872000
WTR YR 1977 TOTAL 408764 MEAN 1120 MAX 15200 MIN 129 AC-FT 810800

LOCATION.--Lat. 40°43'40", long. 91°57'34", in SE1/4 SW1/4 sec.36, T.69 N., R.10 W., Van Buren County, Hydrologic Unit 07100009, on right bank 10 ft (3 m) upstream from bridge on State Highway 1 at Keosauqua, 4.0 mi (6.4 km) downstream from Chequest Creek, and at mile 51.3 (82.5 km).

DRAINAGE AREA.--14,038 mi² (36,358 km²).

PERIOD OF RECORD.--May 1903 to July 1906, April to December 1910, August 1911 to current year. Monthly discharges only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 826: 1913-20. WSP 1438: Drainage area. WSP 1808: 1903, 1905-6, 1910-18 (M), 1922 (M).
1924-26 (M), 1932-34 (M), 1937, 1942 (M).

GAGE.--Water-stage recorder. Datum of gage is 547.36 ft (166.835 m) above mean sea level. Prior to Dec. 24, 1938, nonrecording gage, and Dec. 25, 1933, to Sept. 30, 1972, water-stage recorder, same site at datum 10.00 ft (3.05 m) higher.

REMARKS.--Records good except those for winter period, which are poor. Prior to Dec. 21, 1958, and since Nov. 30, 1960, some diurnal fluctuation at medium and low stages caused by powerplant at Ottumwa. Flow regulated by Lake Red Rock (station 05488100) 91.0 mi (146 km) upstream, since March 12, 1969. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

COOPERATION.--Five discharge measurements.

COOPERATION.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE--88 years (1903-5, 1911-77), 5,447 ft³/s (154.3 m³/s) 5.27 in/yr (134 mm/yr), 3,945,000 acre-
 ft/yr (4,870 hm³/yr); median of yearly mean discharges, 4,660 ft³/s (132 m³/s), 4.8 in/yr (114 mm/yr),
 3,380,000 acre-ft/yr (4,200 hm³/yr).

EXTREMES OUTSIDE PERIOD OF RECORD: Maximum discharge, 146,000 ft³/s (4,130 m³/s) June 1, 1903, gage height, 27.85 ft (8.489 m), from floodmark, datum then in use; minimum daily, 40 ft³/s (1,131 m³/s) Jan. 30, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1, 1851, reached a stage of 24 ft (7 m), discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,800 ft³/s (532 m³/s) Aug. 8, gage height, 15.68 ft (5.084 m); minimum daily, 172 ft³/s (4.87 m³/s) July 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

MEAN VALUES												
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	338	351	215	280	250	500	2420	487	277			
2	335	385	283	240	230	380	2060	654	286	252	380	12000
3	334	382	415	250	280	300	1700	714	303	236	408	11400
4	326	369	330	255	340	380	1760	1560	301	205	283	18600
5	492	306	384	300	320	250	2660	2780	677	198	288	14800
										183	222	13000
6	787	302	380	300	380	380	2150	2340	449	180	474	11300
7	519	349	412	250	310	300	1920	1400	353	214	7300	8210
8	421	373	300	285	318	290	1890	840	293	244	16600	6810
9	406	379	388	260	320	360	1610	731	272	202	12100	6320
10	350	342	376	420	330	500	1550	713	314	249	9360	4430
11	360	315	381	380	280		954	1490	557	295	229	3380
12	306	332	315	320	260		1260	1260	545	338	200	1820
13	365	375	403	300	420	1800	1050	591	339	181	945	13100
14	311	330	352	290	300	787	875	534	326	184	521	11600
15	314	394	421	320	330	617	689	552	320	192	456	5870
16	358	350	412	280	270		725		315	207	473	4000
17	335	348	432	310	270	391	746	558	307	824	811	3630
18	329	336	463	270	270	338	748	519	299	726	1080	7190
19	354	337	445	220	260	388	720	451	284	525	864	7020
20	351	369	368	300	285	1010	772	340	287	240	389	5650
21	370	332										
22	344	323	454	315	300	1030	1010	451	262	243	1060	4260
23	319	329	315	330	310	2090	1040	416	212	270	1010	4020
24	334	349	398	315	275	2150	826	403	212	290	983	3100
25	387	339	483	280	460	2030	693	385	226	245	483	2850
					700	1860	734	379	286	293	317	2860
26	372	345	468	270	450	1310						
27	405	336	430	260	410	942	684	370	283	333	369	2840
28	492	188	413	280	450	1140	829	360	234	222	3850	2430
29	406	200	420	310	---	5750	677	351	220	193	8230	2730
30	376	210	361	290	---	3290	770	387	216	172	11000	2950
31	372	---	420	265	---	2940	---	364	224	183	11100	3060
										269	12000	---
TOTAL	11068	9975	11937	9015	9265	38345	36724	21565	8998	7994	108036	201950
MEAN	383	333	385	291	311	1237	1224	696	300	258	3485	6732
MAX	787	394	483	420	700	5750	2660	2780	677	726	16600	16500
MIN	306	188	215	220	230	250	677	262	212	172	222	2430
AC-FT	23540	19790	23680	17880	18380	76080	72840	42770	17850	15860	214300	400600
CAL YR 1976	TOTAL	1517862		MEAN	4147	MAX	58000	MIN 108				
WTR YR 1977	TOTAL	475672		MEAN	1303	MAX	16600	MIN 172	AC-FT	3011000		
								AC-FT	943500			

MISSOURI RIVER BASIN

BIG SIOUX RIVER BASIN

06483500 ROCK RIVER NEAR ROCK VALLEY, IA

LOCATION.--Lat 43°12'52", long 95°17'39", in SW1/4 SW1/4 sec.16, T.97 N., R.46 W., Sioux County, Hydrologic Unit 10170204, on right bank 3 ft (0.9 m) upstream from bridge on county highway K30, 0.3 mi (0.5 km) north of Rock Valley and at mile 19.1 (30.7 km). Prior to May 5, 1976, at site 3.2 mi (5.1 km) downstream.

DRAINAGE AREA.--1,592 mi² (4,123 km²).

PERIOD OF RECORD.--June 1948 to current year.

REVISED RECORDS.--WSP 1439: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,222.54 ft (372.630 m) above mean sea level. Prior to Aug. 13, 1952, nonrecording gage (June 4, 1949, to Aug. 12, 1952, supplementary water-stage recorder operating above 6.2 ft (1.89 m) gage height) and Aug. 13, 1952, to May 4, 1976, water-stage recorder, at site 3.2 mi (5.1 km) downstream at datum 10.73 ft (3.271 m) lower.

REMARKS.--Records fair except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--29 years, 298 ft³/s (8.156 m³/s), 2.44 in/yr (62 mm/yr), 208,700 acre-ft/yr (257 hm³/yr); median of yearly mean discharges, 230 ft³/s (6.51 m³/s), 2.0 in/yr (51 mm/yr), 167,000 acre-ft/yr (206 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,400 ft³/s (1,140 m³/s) Apr. 7, 1969, gage height, 17.32 ft (5.279 m); no flow for many days during winter period in 1959 and 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1897 reached a stage of 17.0 ft (5.18 m), former site and datum, discharge not determined, from information by State Highway Commission.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,980 ft³/s (84.4 m³/s) Mar. 13, gage height, unknown, no peak above base of 3,000 ft³/s (85.0 m³/s); maximum gage height, 10.95 ft (3.341 m) Mar. 11, from floodmark, backwater from ice; no flow Jan. 9 to Feb. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.6	12	5.2	.40	.00	1.7	139	83	55	40	87	75
2	8.4	12	5.0	.30	.00	1.7	148	77	50	38	84	72
3	8.0	12	5.0	.20	.02	1.7	148	77	43	34	53	89
4	9.6	12	5.0	.10	.03	1.7	146	88	37	29	40	89
5	8.6	12	4.9	.06	.03	1.7	132	117	31	26	33	84
6	7.6	12	4.8	.04	.03	2.0	129	119	25	26	30	81
7	9.6	12	4.7	.03	.04	3.0	124	99	23	28	26	121
8	10	12	4.6	.02	.06	8.0	119	82	20	26	24	74
9	10	12	4.6	.00	.10	10	114	74	19	38	40	81
10	10	12	4.6	.00	.15	50	105	67	18	41	26	53
11	11	10	4.6	.00	.20	300	101	59	18	52	22	49
12	11	9.0	4.6	.00	.30	1730	97	55	17	52	19	52
13	9.1	10	4.6	.00	.28	2620	101	52	17	55	17	56
14	9.1	10	4.6	.00	.28	2300	111	49	17	53	16	53
15	9.6	10	4.6	.00	.23	980	122	46	18	52	74	49
16	8.8	10	4.6	.00	.26	489	124	44	71	46	1050	47
17	9.1	10	4.7	.00	.28	400	122	40	77	39	735	49
18	9.9	11	5.0	.00	.30	328	117	36	83	40	470	49
19	11	11	5.2	.00	.35	284	116	34	129	52	320	49
20	12	11	5.0	.00	.60	244	114	34	194	43	231	44
21	12	10	4.5	.00	.80	207	117	41	182	37	185	43
22	12	10	3.0	.00	1.0	193	121	53	151	24	162	46
23	11	10	2.8	.00	1.5	169	119	62	125	18	133	47
24	11	11	2.6	.00	2.0	155	116	55	105	293	119	52
25	12	12	2.5	.00	1.8	151	116	46	87	74	111	59
26	11	11	2.5	.00	1.8	144	111	40	74	43	111	74
27	10	9.5	2.0	.00	1.7	140	105	44	61	33	113	83
28	9.9	7.0	1.5	.00	1.7	136	97	53	61	34	111	85
29	10	6.0	1.0	.00	---	144	90	56	52	236	103	83
30	10	5.5	.80	.00	---	144	88	52	44	200	92	164
31	12	---	.60	.00	---	142	---	62	---	127	83	---
TOTAL	312.7	313.0	119.70	1.15	15.71	11478.5	3809	1905	1905	1928	4700	1951
MEAN	10.1	10.4	3.86	.037	.56	370	117	61.5	63.5	62.2	152	65.0
MAX	12	12	5.2	.40	2.0	2620	148	119	194	293	1050	164
MIN	7.6	5.5	.60	.00	.00	1.7	88	34	17	18	16	43
CFSM	.006	.007	.002	.000	.000	.23	.07	.04	.04	.04	.10	.04
IN.	.01	.01	.00	.00	.00	.27	.08	.04	.04	.05	.11	.05
AC-FT	620	621	237	2.3	31	22770	6960	3780	3780	3820	9320	3870

CAL YR 1976 TOTAL 59430.40 MEAN 162 MAX 2090 MIN .60 CFSM .10 IN 1.39 AC-FT 117900
 VTR YR 1977 TOTAL 28139.76 MEAN 77.1 MAX 2620 MIN .00 CFSM .05 IN .65 AC-FT 65820

BIG SIOUX RIVER BASIN

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06498500 BIG SIOUX RIVER AT AKRON, IA
(National stream-quality accounting network station)

LOCATION.--Lat 42°49'42", long 98°33'45", in NW1/4 SW1/4 sec.31, T.93 N., R.48 W., Plymouth County, Iowa. Hydrologic Unit 10170203, on left bank at west edge of Akron, 0.6 mi (1.0 km) downstream from bridge on State Highway 48, and 2.3 mi (3.7 km) upstream from Union Creek.

DRAINAGE AREA.--9,030 mi² (23,390 km²), approximately, of which about 1,970 mi² (5,100 km²) is probably noncontributing.

PERIOD OF RECORD.--October 1928 to current year.

REVISED RECORDS.--WSP 1309: 1929 (M), 1931-33 (M), 1936 (M), 1938 (M), 1940 (M). WSP 1399: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,118.99 ft (341.041 m) above mean sea level. Prior to Dec. 3, 1934, nonrecording gage at bridge 300 ft (91 m) upstream at same datum.

REMARKS.--Records good except those for the winter period, which are poor. Water-quality data available in reports of Water Resources Data for South Dakota. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--49 years, 820 ft³/s (23.22 m³/s), 894,100 acre-ft/yr (733 km³/yr); median of yearly mean discharges, 710 ft³/s (20.1 m³/s), 814,000 acre-ft/yr (630 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 99,900 ft³/s (2,290 m³/s) Apr. 9, 1989, gage height, 22.99 ft (7.007 m); minimum daily, 4 ft³/s (0.11 m³/s) Jan. 17, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,270 ft³/s (149 m³/s) Mar. 18, gage height, 13.60 ft (4.145 m) at 1300 hours; no other peak above base of 3,500 ft³/s (99.1 m³/s); minimum daily, 4 ft³/s (0.11 m³/s) Jan. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	55	32	14	5.6	37	574	239	159	376	284	166
2	40	56	30	13	6.0	38	549	224	151	307	209	160
3	38	50	32	12	5.9	40	529	235	136	279	182	157
4	45	56	33	11	5.7	41	553	227	128	237	132	143
5	40	54	34	10	5.6	43	551	251	116	215	114	139
6	39	55	33	9.8	5.4	45	472	260	103	212	103	138
7	40	55	32	9.2	7.5	47	460	277	93	200	93	151
8	40	53	29	8.6	10	50	440	245	86	176	88	156
9	40	55	27	7.9	15	55	417	217	80	163	92	179
10	39	59	25	7.2	20	60	385	198	74	150	97	140
11	41	55	26	6.6	25	70	350	187	75	175	89	126
12	42	53	28	6.0	28	88	357	177	69	165	79	444
13	40	52	30	5.6	30	1000	342	169	69	166	74	176
14	41	51	32	5.1	26	3860	346	159	66	179	67	146
15	41	50	34	4.8	26	4940	355	151	65	164	62	161
16	46	51	35	4.3	29	4120	346	145	67	144	61	190
17	40	52	30	4.0	23	3250	337	125	104	194	407	269
18	41	53	41	4.1	24	2960	320	130	117	139	1720	150
19	46	54	42	4.2	26	2630	337	125	116	123	1600	141
20	47	51	40	4.5	27	2100	328	127	126	113	974	135
21	48	48	38	4.7	28	1000	319	131	159	128	621	126
22	47	46	36	4.9	30	1430	317	140	154	116	438	124
23	49	44	34	5.1	31	1150	356	147	260	102	349	122
24	52	45	31	5.4	32	980	337	167	400	121	308	123
25	52	44	32	5.1	32	859	308	192	529	165	256	126
26	55	42	33	4.8	33	770	305	169	507	206	247	127
27	53	39	35	4.5	34	706	265	255	509	259	249	184
28	55	37	34	4.8	35	643	274	297	557	247	229	170
29	57	34	28	5.0	---	618	260	193	476	165	211	174
30	57	33	22	5.3	---	604	247	179	448	160	195	189
31	55	---	17	5.6	---	559	---	176	---	257	155	---
TOTAL	1491	1491	996	207.0	604.0	2600	11267	8964	6229	8039	9791	4907
MEAN	45.2	49.7	32.1	6.68	21.6	1150	376	192	208	155	316	164
MAX	57	50	42	14	36	4000	574	297	609	376	1720	444
MIN	28	33	17	4.0	5.4	37	247	125	65	102	61	122
CFSM	.005	.006	.004	.001	.002	.13	.04	.02	.02	.02	.04	.02
IN.	.01	.01	.00	.00	.00	.15	.05	.02	.03	.02	.04	.02
AC-FT	2760	2960	1980	411	1200	70720	22200	11620	12390	11680	19420	9730

CAL YR 1976 TOTAL 126702.0 MEAN 346 MAX 3230 MIN 17 CFSM .04 IN .52 AC-FT 261300
WTR YR 1977 TOTAL 84356.0 MEAN 231 MAX 4500 MIN 4.0 CFSM .03 IN .25 AC-FT 167300

MISSOURI RIVER MAIN STEM

06496000 MISSOURI RIVER AT SIOUX CITY, IA
(National stream-quality accounting network station)

LOCATION.--Lat 42°29'10", long 96°24'47", in NW1/4 SE1/4 sec.16, T.29 N., R.9 E., sixth principal meridian, Dakota County, Nebraska, Hydrologic Unit 10230001, on right bank on upstream side of bridge on U.S. Highway 77 at South Sioux City, Nebraska, 2.0 mi (3.2 km) downstream from Big Sioux River, and at mile 732.3 (1,178.3 km).

DRAINAGE AREA.--314,800 mi² (814,800 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1897 to current year in reports of Geological Survey. Prior to October 1928 and October 1931 to September 1938, monthly discharges only published in WSP 1310. January 1879 to December 1890 (monthly discharges only) in House Document 238, 73rd Congress, 2d session, Missouri River. Gage-height records collected in this vicinity September 1878 to December 1899 are contained in reports of Missouri River Commission and since July 1899 are contained in reports of U.S. Weather Bureau.

REVISED RECORDS.--WSP 716: 1929-30. WSP 875: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,056.98 ft (322.168 m) above mean sea level. Sept. 2, 1878, to Dec. 31, 1905, nonrecording gages at various locations within 1.7 mi (2.7 km) of present site and at various datums. Jan. 1, 1906, to Feb. 14, 1935, nonrecording gage, and Feb. 15, 1935 to Sept. 30, 1969, water-stage recorder at present site at datum 19.98 ft (6.090 m) higher, and Oct. 1, 1969 to Sept. 30, 1970 at datum 20.00 ft (6.096 m) higher.

REMARKS.--Records good except those for winter period, which are poor. Flow regulated by upstream main-stem reservoirs. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--80 years, 31,970 ft³/s (905.4 m³/s), 23,160,000 acre-ft/yr (28,600 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 441,000 ft³/s (12,500 m³/s) Apr. 14, 1952, gage height, 24.28 ft (7.401 m), datum then in use; minimum, 2,500 ft³/s (70.8 m³/s) Dec. 29, 1941; minimum gage height, 11.6 ft (3.54 m), Jan. 29, 1977, from graph based on gage-heights furnished by Iowa Public Power 14.0 miles (22.5 km) downstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 40,100 ft³/s (1,140 m³/s) Oct. 2, gage height, 20.73 ft (6.319 m); minimum daily, 9,000 ft³/s (255 m³/s) Jan. 29; minimum gage height, 11.6 ft (3.54 m), Jan. 29, from graph based on gage-heights furnished by Iowa Public Power 14.0 miles (22.5 km) downstream.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38900	37300	35600	19300	14000	16300	33600	33000	30800	32000	37000	32000
2	38900	37800	38900	19300	17000	16000	35900	33000	30800	33300	37800	31600
3	38600	37600	37800	19500	18000	16800	32800	33300	31000	33600	37300	32600
4	38300	37000	38200	20000	18000	16500	31000	33300	31000	33000	37000	32000
5	38100	36200	31900	19700	17800	15900	31000	33000	30800	33300	37600	31600
6	37800	36200	28900	18900	18400	15900	29800	32300	30800	33800	35900	31300
7	37000	36700	26000	19500	18500	15900	30800	31600	30600	34800	34300	31300
8	36700	37300	23500	19700	18500	16000	31000	32000	31000	34600	34800	31000
9	36400	37300	21400	20000	19700	16900	32300	32300	31800	34800	36700	30800
10	35400	37300	21900	20100	20200	16500	31000	31800	33000	33000	34000	30800
11	35600	37300	20200	20100	20500	17700	32600	31300	33000	34600	31600	30800
12	36400	36700	21900	20100	21100	17900	32600	31600	34300	34300	32300	31800
13	36200	36400	21100	20400	20700	17500	32300	31800	35100	33300	32300	32300
14	36200	36200	21200	20100	19500	18500	32600	33000	33300	33600	33800	30300
15	35600	36200	21200	20300	15500	20300	30800	33000	33000	32800	33600	31000
16	35600	35900	21400	20500	15800	21000	31300	32800	34000	33300	34300	32800
17	35900	36400	21400	20500	16200	20500	31800	33000	34800	33600	33300	32400
18	36200	36400	21500	20500	16900	21200	30800	33300	34300	33600	30600	32800
19	36400	36400	21600	20500	16700	24600	31300	33800	32300	33300	33000	32800
20	35900	36700	20400	20500	16500	28000	31300	34000	30600	34300	34600	32000
21	36200	36400	19700	20500	17300	31600	31800	33800	31300	36400	34300	32600
22	36200	36400	22000	20500	17800	32000	30600	33800	32800	34800	34800	33000
23	36400	36400	21700	20500	16900	30600	30600	33300	35600	32600	34300	33000
24	37000	36400	20500	19000	16800	32600	29800	31300	32600	33000	33800	34300
25	36400	36700	21800	15700	16300	34000	31000	32000	30000	33000	33300	34000
26	36700	37000	21200	13600	16300	31800	32000	32300	31000	33300	33000	33600
27	37000	36700	21200	13800	16300	32300	31000	34300	31000	33000	31000	33600
28	36400	35900	21100	12600	16300	32300	31600	33300	32600	33000	30800	33000
29	38400	35400	20400	9000	---	33300	32000	31800	33800	35100	31000	33800
30	36700	34600	20200	11000	---	32300	32800	31300	32800	36200	31800	33300
31	37300	---	19700	13000	---	29800	---	31600	---	35900	33600	---
TOTAL	1138600	1097200	743300	568700	493500	722500	949800	1012000	969800	1049200	1053500	968600
MEAN	36740	35570	23980	18350	17630	23310	31660	32650	32330	33850	33980	32290
MAX	38900	37800	38900	20500	21100	34000	35900	34300	35600	36400	37800	34300
MIN	35400	34600	19700	9000	14000	15900	29800	31300	30000	32000	30600	30300
AC-FT	2259000	2176000	1474000	1128000	978900	1433000	1884000	2007000	1924000	2081000	2090000	1921000

CAL VR 1976 TOTAL 12692800 MEAN 34680 MAX 41100 MIN 12000 AC-FT 25180000
WTR VR 1977 TOTAL 10766900 MEAN 29500 MAX 38900 MIN 9000 AC-FT 21360000

MISSOURI RIVER MAIN STEM

08485000 MISSOURI RIVER AT SIOUX CITY, IA--Continued
(National Stream Quality Accounting Network Station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972 to current year. Daily sediment loads October 1954 to September 1971 in reports of Corps of Engineers.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1972 to September 1976.
WATER TEMPERATURES: October 1971 to September 1976.
SUSPENDED-SEDIMENT DISCHARGE: October 1971 to September 1976.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,620 mg/L Nov. 20, 1972; minimum daily mean, 42 mg/L Dec. 29, 1975.
SEDIMENT LOADS: Maximum daily, 222,000 tons (201,000 tonnes) Nov. 20, 1972; minimum daily, 2,970 tons (2,700 tonnes) Dec. 29, 1975.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS) (00061)	DIS-SOLVED SILICA (SI02) (MG/L) (00955)	TOTAL IRON (FE) (UG/L) (01045)	DIS-SOLVED IRON (FE) (UG/L) (01046)	TOTAL MANGANESE (MN) (UG/L) (01055)	SUSPENDED MANGANESE (MN) (UG/L) (01054)	DIS-SOLVED MANGANESE (MN) (UG/L) (01056)	TOTAL CALCIUM (CA) (MG/L) (00916)	DIS-SOLVED CALCIUM (CA) (MG/L) (00915)
OCT 12...	1515	38000	8.5	--	--	--	--	--	52	55
NOV 09...	1500	35200	8.9	--	--	--	--	--	--	54
DEC 14...	1130	22000	7.1	3100	30	80	70	10	57	59
JAN 24...	1130	20000	8.1	--	--	--	--	--	55	61
FEB 08...	1300	19400	7.2	--	--	--	--	--	58	59
MAR 08...	1430	15400	11	4800	20	160	140	20	53	57
APR 11...	1200	33100	8.0	--	--	--	--	--	60	61
MAY 11...	1430	33400	7.4	--	--	--	--	--	58	55
JUN 07...	1700	31200	8.1	1900	60	110	110	0	55	58
JUL 08...	1530	33700	8.1	--	--	--	--	--	63	57
AUG 08...	1600	35000	8.1	--	--	--	--	--	62	57
SEP 06...	1730	32600	9.6	2200	120	140	140	0	60	58

DATE	TOTAL MAGNESIUM (MG/L) (00927)	DIS-SOLVED MAGNESIUM (MG/L) (00928)	TOTAL SODIUM (NA) (MG/L) (00929)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	TOTAL POTASSIUM (K) (MG/L) (00937)	DIS-SOLVED POTASSIUM (K) (MG/L) (00938)	BICARBONATE (HCO3) (MG/L) (00440)	CARBONATE (CO3) (MG/L) (00445)	ALKALINITY AS CaCO3 (MG/L) (00410)	DIS-SOLVED SULFATE (SO4) (MG/L) (00948)
OCT 12...	18	22	49	60	3.9	5.0	191	0	157	190
NOV 09...	22	21	56	74	--	4.8	188	0	154	190
DEC 14...	22	23	65	68	4.5	4.8	192	0	157	200
JAN 24...	21	20	55	64	4.4	4.8	200	0	160	200
FEB 08...	23	24	60	62	4.9	4.9	192	0	160	190
MAR 08...	19	21	47	56	5.2	5.8	180	0	150	170
APR 11...	22	21	60	60	5.1	5.1	180	0	160	190
MAY 11...	21	21	--	65	5.5	4.9	180	0	160	190
JUN 07...	19	18	61	63	5.5	5.1	180	0	150	180
JUL 08...	20	19	67	63	5.2	4.8	180	0	150	180
AUG 08...	21	20	70	73	4.9	5.3	190	0	160	210
SEP 06...	21	21	71	67	5.0	5.5	190	0	160	200

MISSOURI RIVER MAIN STEM

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued
(National Stream Quality Accounting Network Station)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL AMMONIA NITRO- GEN (N) (MG/L) (00610)	TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	TOTAL NITRO- GEN (N) (MG/L) (00600)	TOTAL NITRO- GEN (N) (MG/L) (71887)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)
OCT 12...	9.4	.5	.06	.00	.35	.35	.41	1.8	.05	454
NOV 09...	10	.5	.07	.02	.36	.38	.45	2.0	.05	425
DEC 14...	11	.5	.08	.04	.39	.43	.51	2.3	.05	474
JAN 24...	10	.5	.07	.03	.16	.19	.26	1.2	.04	422
FEB 08...	9.7	.5	.01	.02	.37	.39	.40	1.8	.02	445
MAR 08...	9.0	.4	.11	.12	.23	.35	.46	2.0	.07	427
APR 11...	10	.4	.07	.01	.72	.73	.80	3.5	.06	467
MAY 11...	10	.6	.04	.04	.39	.43	.47	2.1	.05	476
JUN 07...	9.1	.6	.00	.01	.71	.72	.72	3.2	.05	435
JUL 05...	10	.6	.03	.04	.13	.17	.20	.89	.08	460
AUG 08...	11	.5	.01	.01	.25	.26	.27	1.2	.05	474
SEP 06...	13	.6	.00	.00	.56	.56	.56	2.5	.05	462

DATE	DIS- SOLVED SOLIDS (SUM OF CONSTITU- ENTS) (MG/L) (70301)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	TOTAL RESI- DUE (MG/L) (00600)	HARD- NESS (CA, MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)
OCT 12...	445	.62	46600	516	230	71	36	1.7	670	7.5
NOV 09...	454	.58	40400	590	220	67	41	2.2	680	8.6
DEC 14...	456	.64	28200	686	240	85	37	1.8	750	7.5
JAN 24...	470	.57	22800	547	250	83	36	1.8	760	7.3
FEB 08...	452	.61	23300	473	250	89	35	1.7	840	7.9
MAR 08...	419	.58	17800	494	230	81	34	1.6	710	7.1
APR 11...	444	.64	41700	555	240	91	35	1.7	660	7.3
MAY 11...	444	.65	42900	505	230	79	38	1.9	700	7.3
JUN 07...	431	.59	36600	514	220	71	38	1.9	650	7.2
JUL 05...	433	.63	41900	561	220	73	38	1.8	700	7.4
AUG 08...	479	.64	44800	564	220	69	41	2.1	740	7.8
SEP 06...	469	.63	40700	523	230	75	38	1.9	725	7.6

MISSOURI RIVER MAIN STEM

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06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued
(National Stream Quality Accounting Network Station)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (JTU) (00070)	DIS- SOLVED OXYGEN (MG/L) (00300)	PER- CENT SATUR- ATION (00301)	CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340)	CARBON DIOXIDE (CO2) (MG/L) (00405)	TOTAL PHYTO- PLANK- TON (CELLS PER ML) (60050)	FECAL COLI- FORM (COL./ 100 ML) (31625)	FECAL STREP- TOCOCCI KF AGAR (COL. PER 100 ML) (31673)	TOTAL ORGANIC CARBON (C) (MG/L) (00580)
OCT										
12...	17.0	15	11.0	113	11	9.7	650	811	40	--
NOV										
09...	6.0	15	11.7	98	300	.8	32	84	87	--
DEC										
14...	.0	10	16.6	118	21	9.7	590	83	814	6.0
JAN										
24...	.0	8	15.6	111	6	16	3500	16	110	--
FEB										
08...	.0	4	14.4	102	9	3.9	--	81	821	--
MAR										
09...	6.5	15	12.0	101	17	23	--	19	42	9.1
APR										
11...	12.5	20	11.2	109	23	14	--	22	110	--
MAY										
11...	17.0	20	10.3	110	20	14	3500	84	30	--
JUN										
07...	23.0	15	9.2	110	12	18	4800	23	46	5.3
JUL										
05...	25.0	30	9.4	116	33	11	16000	830	36	--
AUG										
08...	29.0	20	9.4	117	11	4.8	5800	56	240	--
SEP										
06...	23.0	20	9.4	112	45	7.6	5000	810	740	4.2

DATE	TOTAL ARSENIC (AS) (UG/L) (01002)	SUS- PENDE D ARSENIC (AS) (UG/L) (01001)	DIS- SOLVED ARSENIC (AS) (UG/L) (01000)	TOTAL CAD- MIUM (CD) (UG/L) (01027)	SUS- PENDE D CAD- MIUM (CD) (UG/L) (01026)	DIS- SOLVED CAD- MIUM (CD) (UG/L) (01025)	TOTAL CHRO- MIUM (CR) (UG/L) (01034)	SUS- PENDE D CHRO- MIUM (CR) (UG/L) (01031)	DIS- SOLVED CHRO- MIUM (CR) (UG/L) (01030)	TOTAL COBALT (CO) (UG/L) (01037)
NOV										
09...	--	--	--	--	--	--	--	--	--	--
DEC										
14...	4	2	2	0	0	0	20	17	3	0
JAN										
24...	--	--	--	--	--	--	--	--	--	--
FEB										
08...	--	--	--	--	--	--	--	--	--	--
MAR										
08...	3	1	2	40	24	16	10	10	0	2
APR										
11...	--	--	--	--	--	--	--	--	--	--
MAY										
11...	--	--	--	--	--	--	--	--	--	--
JUN										
07...	2	0	3	10	--	8	10	10	0	<50
JUL										
05...	--	--	--	--	--	--	--	--	--	--
AUG										
08...	--	--	--	--	--	--	--	--	--	--
SEP										
06...	4	3	1	10	9	1	0	0	30	<50

MISSOURI RIVER MAIN STEM

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued
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WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	SUS- PENDE D COBAL (CO) (UG/L) (01038)	DIS- SOLVED COBAL (CO) (UG/L) (01038)	TOTAL COPPER (CU) (UG/L) (01042)	SUS- PENDE D COPPER (CU) (UG/L) (01041)	DIS- SOLVED COPPER (CU) (UG/L) (01040)	TOTAL LEAD (PB) (UG/L) (01051)	SUS- PENDE D LEAD (PB) (UG/L) (01050)	DIS- SOLVED LEAD (PB) (UG/L) (01049)	TOTAL MERCURY (HG) (UG/L) (71900)	SUS- PENDE D MERCURY (HG) (UG/L) (71895)
NOV 09...	--	--	--	--	--	--	--	--	--	--
DEC 14...	0	0	5	0	5	10	6	4	.1	.1
JAN 24...	--	--	--	--	--	--	--	--	--	--
FEB 08...	--	--	--	--	--	--	--	--	--	--
MAR 08...	2	0	36	25	11	23	17	6	.0	.0
APR 11...	--	--	--	--	--	--	--	--	--	--
MAY 11...	--	--	--	--	--	--	--	--	--	--
JUN 07...	--	0	10	0	20	<100	--	17	.0	.0
JUL 05...	--	--	--	--	--	--	--	--	--	--
AUG 08...	--	--	--	--	--	--	--	--	--	--
SEP 06...	<50	0	10	0	13	<100	<100	0	.0	.0

DATE	DIS- SOLVED MERCURY (HG) (UG/L) (71890)	TOTAL SELE- NIUM (SE) (UG/L) (01147)	SUS- PENDE D SELE- NIUM (SE) (UG/L) (01146)	DIS- SOLVED SELE- NIUM (SE) (UG/L) (01145)	TOTAL ZINC (ZN) (UG/L) (01092)	SUS- PENDE D ZINC (ZN) (UG/L) (01091)	DIS- SOLVED ZINC (ZN) (UG/L) (01090)	SUS- PENDE D SEDI- MENT (MG/L) (80154)	SUS- PENDE D SEDI- MENT (T/DAY) (80155)
NOV 09...	--	--	--	--	--	--	--	877 83400	
DEC 14...	.0	2	0	2	30	30	4	254 15100	
JAN 24...	--	--	--	--	--	--	--	470 25400	
FEB 08...	--	--	--	--	--	--	--	924 48400	
MAR 08...	.0	1	1	0	30	20	10	1120 46600	
APR 11...	--	--	--	--	--	--	--	549 49100	
MAY 11...	--	--	--	--	--	--	--	89 8030	
JUN 07...	.0	2	--	2	30	20	10	316 26600	
JUL 05...	--	--	--	--	--	--	--	162 14700	
AUG 08...	--	--	--	--	--	--	--	277 26200	
SEP 06...	.0	2	0	2	30	20	10	--	--

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SUS- PENDE D SEDI- MENT (MG/L) (80154)	SUS- PENDE D SEDI- MENT (T/DAY) (80155)	SUS- PENDE D SIEVE DIAM. & FINER THAN .062 MM (70331)
NOV 09...	1500	5.0	35200	877 83400		11
DEC 14...	1130	.0	22000	254 15100		37
JAN 24...	1130	.0	20000	470 25400		22
FEB 08...	1300	.0	19400	924 48400		7
MAR 08...	1430	6.5	18400	1120 46600		12
APR 11...	1200	12.5	33100	549 49100		16
MAY 11...	1430	17.0	33400	89 8030		80
JUN 07...	1700	23.0	31200	316 26600		29
JUL 05...	1530	25.0	33700	162 14700		63
AUG 08...	1600	25.0	36000	277 26200		26

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued
(National Stream Quality Accounting Network Station)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	ALDRIN		TOTAL ATRA- ZINE (UG/L) (39630)	CHLOR- DANE		TOTAL DDD (UG/L) (39360)	DDD		DDE		TOTAL DDT (UG/L) (39370)	TOTAL DI- AZINON (UG/L) (39570)
	TOTAL ALDRIN (UG/L) (39330)	BOTTOM MA- TERIAL (UG/KG) (39333)		BOTTOM MA- TERIAL (UG/KG) (39351)	BOTTOM MA- TERIAL (UG/KG) (39363)		BOTTOM MA- TERIAL (UG/KG) (39365)	BOTTOM MA- TERIAL (UG/KG) (39368)				
NOV 09...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 08...	ND	--	ND	ND	--	ND	--	ND	--	ND	ND	ND
APR 29...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 05...	ND	--	ND	ND	--	ND	--	ND	--	ND	ND	ND

DATE	DI-AZINON IN BOTTOM MA- TERIAL		DI-ELDRIN IN BOTTOM MA- TERIAL		ENDRIN IN BOTTOM MA- TERIAL		ETHION IN BOTTOM MA- TERIAL		HEPTA- CHLOR IN BOTTOM MA- TERIAL		HEPTA- CHLOR EPOXIDE IN BOT- TOM MA- TERIAL	
	(UG/KG) (39571)	TOTAL DI- ELDRIN (UG/L) (39380)	(UG/KG) (39383)	TOTAL ENDRIN (UG/L) (39390)	(UG/KG) (39393)	TOTAL ETHION (UG/L) (39398)	(UG/KG) (39399)	TOTAL HEPTA- CHLOR (UG/L) (39410)	(UG/KG) (39413)	TOTAL HEPTA- CHLOR EPOXIDE (UG/L) (39420)	(UG/KG) (39422)	
NOV 09...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
FEB 08...	--	ND	--	ND	--	ND	--	ND	--	ND	--	
APR 29...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
AUG 05...	--	ND	--	ND	--	ND	--	ND	--	ND	--	

DATE	LINDANE		MALA-THION		METHOX-CHLOR		METHYL-PARA-THION		METHYL-TRI-THION	
	TOTAL LINDANE (UG/L) (39340)	MA- BOTTOM TERIAL (UG/KG) (39343)	TOTAL MALA-THION (UG/L) (39530)	MA- BOTTOM TERIAL (UG/KG) (39531)	TOTAL METH- OX- CHLOR (UG/L) (39480)	MA- BOTTOM TERIAL (UG/KG) (39481)	TOTAL METHYL IN BOT- TOM MA- THION (UG/L) (39600)	MA- BOTTOM TERIAL (UG/KG) (39601)	TOTAL METHYL IN BOT- TOM MA- THION (UG/L) (39790)	MA- BOTTOM TERIAL (UG/KG) (39791)
NOV 09...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 08...	ND	--	ND	--	ND	--	ND	--	ND	--
APR 29...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 05...	ND	--	ND	--	ND	--	ND	--	ND	--

DATE	PARA-THION		TOX-APHENE		TRI-THION		2,4-D		2,4,5-T		SILVEX	
	IN	TOTAL	IN	TOTAL	IN	TOTAL	IN	TOTAL	IN	TOTAL	IN	TOTAL
	MA-TERIAL (UG/KG) (39541)	TOX-APHENE (UG/L) (39400)	MA-TERIAL (UG/KG) (39403)	TRI-THION (UG/L) (39786)	MA-TERIAL (UG/KG) (39787)	2,4-D (UG/L) (39730)	MA-TERIAL (UG/KG) (39731)	2,4,5-T (UG/L) (39740)	MA-TERIAL (UG/KG) (39741)	SILVEX (UG/L) (39760)	MA-TERIAL (UG/KG) (39761)	
NOV 05...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
FEB 08...	--	ND	--	ND	--	ND	--	ND	--	ND	--	
APR 29...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
AUG 05...	--	ND	--	ND	--	ND	--	ND	--	ND	--	

ND Not detected; detection limit is 0.10 UG/KG.

MISSOURI RIVER MAIN STEM

08486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued
(National Stream Quality Accounting Network Station)

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	OCT 12, 76 1615	NOV 9, 76 1600	DEC 14, 76 1130	JAN 24, 77 1130	FEB 9, 77 1300	
TOTAL CELLS/ML	650	32	690	3600	11000	
DIVERSITY: DIVISION	1.0	0.0	0.0	0.1	0.0	
..CLASS	1.0	0.0	0.0	0.1	0.0	
..ORDER	1.3	0.0	1.0	0.1	0.2	
...FAMILY	1.4	0.0	1.4	0.2	0.2	
....GENUS	1.4	1.6	2.0	0.2	0.2	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
....OOCYSTACEAE						
...ANKISTRODESMUS	--	--	--	28	1	--
...VOLVOCEAE						
...CHLAMYDOMONADACEAE						
...CHLAMYDOMONAS	--	--	--	--	--	--
...PHACOTACEAE						
...PHACOTUS	--	--	--	--	--	--
...VOLVOCEAE						
...PANDORINA	330*	52	--	--	--	--
CHRYSOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
...COSCINODISCEAE						
...CYCLOTELLA	250*	39	--	--	190	2
...HELOSIRA	--	--	--	--	--	--
...STEPHANODISCUS	--	--	140*	24	--	--
...PERMALES						
...ACHNANTHACEAE						
...RHODOSPHENIA	--	--	8*	25	--	--
...CYMBELLACEAE						
...CYMBELLA	--	--	--	--	0	--
...DIATOMACEAE						
...DIATOMA	--	--	20	5	0	--
...FRAGILARIACEAE						
...ASTERIONELLA	--	--	160*	31	3400*	38
...FRAGILARIA	--	--	--	--	--	--
...SYNEDRA	42	6	--	--	--	--
...GOMPHONEMACEAE						
...GOMPHONEMA	--	--	--	--	--	--
...NAVICULACEAE						
...GYROSIGMA	--	--	--	--	--	--
...NAVICULA	--	--	160*	31	--	--
...PINNULARIA	--	--	8*	25	--	--
...NITZSCHACEAE						
...NITZSCHIA	--	--	9	1	0	0
...SURIPELLACEAE						
...SURIPELLA	21	3	--	--	0	0
..CHRYSOPHYCEAE						
...CHRYSONOMADACEAE						
...OCHROMONADACEAE						
...DINOBRYON	--	--	--	--	0	0
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...NORMOGONALES						
...NOSTOCACEAE						
...ANABAENA	--	--	--	--	--	--
...OSCILLATORIACEAE						
...LYNGBYA	--	--	--	--	--	--
...OSCILLATORIA	--	--	--	--	0	0
EUGLENOPHYTA (EUGLENOIDS)						
..CRYPTOPHYCEAE						
...CRYPTOMONIDALES						
...CRYPTOCHRYSIDACEAE						
...CHROMONAS	--	--	--	--	0	0
...CRYPTOMONADACEAE	--	--	--	--	0	0
...CRYPTOMONAS						
PYRRHOPHYTA (FIRE ALGAE)						
..DINOPHYCEAE						
...PERIDINIALES						
...GLENODINIACEAE						
...GLENODINIUM	--	--	--	--	0	0

NOTE: * - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 10%

- OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

DATE TIME	MAY 14, 77 1430	JUN 7, 77 1700	JUL 5, 77 1630	AUG 9, 77 1600	SEP 6, 77 1730
TOTAL CELLS/ML	2600	4000	16000	8000	8000
DIVERSITY: DIVISION	0.6	1.4	1.2	1.1	1.1
..CLASS	0.6	1.4	1.3	1.1	1.1
..ORDER	1.0	1.0	2.1	1.0	1.0
...FAMILY	1.0	2.0	3.0	2.0	2.0
....GENUS	1.7	3.1	3.7	2.7	2.7

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

[illegible]

FLOYD RIVER BASIN

05600100 FLOYD RIVER AT ALTON, IA

LOCATION.--Lat 42°58'55", long 96°00'03", in NE1/4 NE1/4 sec.11, T.94 N., R.44 W., Sioux County, Hydrologic Unit 10230002, on left bank at downstream side of Chicago and Northwestern Railway Company bridge at east edge of Alton, 34.3 mi (55.2 km) upstream from West Branch Floyd River at mile 58.1 (93.6 km).

DRAINAGE AREA.--265 mi² (686 km²).

PERIOD OF RECORD.--October 1955 to current year. Prior to December 1955, monthly discharge only, published in WSP 1730.

GAGE.--Water-stage recorder. Datum of gage is 1,269.55 ft (386.959 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--22 years, 44.5 ft³/s (1,260 m³/s), 2.28 in/yr (58 mm/yr), 32,240 acre-ft/yr (39.8 km³/yr); median of yearly mean discharges, 36 ft³/s (1,02 m³/s), 1.8 in/yr (46 mm/yr), 26,100 acre-ft/yr (32.2 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,200 ft³/s (346 m³/s) Mar. 20, 1962, gage height, 18.35 ft (5.593 m); no flow at times in 1956, 1958-59, 1965, 1968, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1953 reached a discharge of about 45,500 ft³/s (1,290 m³/s), from information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 148 ft³/s (4.19 m³/s) Jul. 24, gage height, 7.46 ft (2.274 m), no peak above base of 600 ft³/s (22.7 m³/s); no flow Feb. 15-21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	2.6	2.0	.60	.20	.60	11	3.6	11	3.5	6.5	4.1
2	2.4	2.4	1.5	.60	.20	.50	11	3.6	9.3	3.1	5.4	4.4
3	2.3	2.0	1.3	.70	.20	.60	11	4.9	7.8	2.6	3.8	4.5
4	2.2	3.7	1.2	.70	.20	.50	11	7.4	6.3	2.3	3.1	4.3
5	2.3	2.7	1.1	.70	.20	.50	10	9.8	5.2	2.1	2.6	3.9
6	2.3	2.7	1.1	.60	.20	.50	10	12	4.2	2.5	2.8	3.7
7	2.5	2.8	1.1	.60	.20	1.0	10	9.3	3.5	2.5	2.6	5.2
8	2.5	2.6	1.1	.60	.10	2.0	10	7.5	3.0	7.9	2.5	5.6
9	2.1	2.8	1.1	.60	.10	5.0	10	7.2	2.8	15	2.6	6.1
10	2.2	2.4	1.0	.50	.10	25	10	6.0	2.7	9.3	2.4	5.4
11	2.4	2.4	1.0	.60	.10	100	9.5	4.6	2.5	22	2.6	5.1
12	2.3	2.4	1.0	.50	.10	70	9.0	3.8	2.6	51	2.5	5.7
13	2.3	2.2	1.0	.50	.10	50	9.5	3.5	2.4	24	2.3	5.5
14	2.2	2.2	1.0	.60	.10	40	11	3.6	3.0	15	2.3	4.9
15	2.0	2.2	1.0	.50	.00	35	11	3.1	3.2	10	2.8	4.6
16	2.1	2.4	1.1	.50	.00	30	11	2.7	3.7	8.6	5.6	4.3
17	2.1	2.7	1.1	.50	.00	25	11	2.6	4.6	7.9	2.8	5.6
18	2.3	2.9	1.1	.40	.00	20	9.5	2.8	8.3	6.0	4.1	6.7
19	4.3	2.8	1.1	.40	.00	15	8.5	3.4	10	10	2.8	5.2
20	4.5	3.4	1.1	.40	.00	14	8.5	4.0	8.6	11	2.0	4.0
21	4.6	2.8	1.0	.40	.00	12	9.7	5.6	7.7	9.4	14	3.9
22	4.0	2.2	1.0	.40	.10	11	10	2.9	7.1	7.7	12	3.8
23	4.0	2.2	1.0	.40	.20	10	9.1	22	6.6	6.9	10	6.3
24	5.6	2.2	1.0	.40	.20	10	7.9	13	6.1	103	8.9	6.4
25	5.2	2.6	1.0	.35	.20	10	7.1	10	5.2	81	8.7	7.9
26	5.5	3.6	1.0	.30	.40	11	6.3	7.5	5.3	32	7.9	5.9
27	3.7	6.5	1.0	.30	.50	12	5.7	9.1	4.9	18	5.9	4.5
28	3.2	5.3	.90	.30	.50	13	5.0	24	3.8	12	5.0	4.0
29	2.9	4.0	.90	.30	---	12	4.4	33	3.5	10	5.5	4.5
30	2.8	3.0	.90	.30	---	11	4.0	20	4.0	10	5.0	5.0
31	2.8	---	.60	.30	---	11	---	15	---	7.6	4.5	---
TOTAL	95.1	90.5	33.50	15.05	4.30	559.00	271.7	294.1	150.5	516.9	258.8	153.0
MEAN	3.07	3.02	1.08	.49	.15	18.0	9.06	9.49	5.35	16.7	8.35	5.10
MAX	6.2	6.5	2.0	.80	.50	100	11	33	11	103	41	6.4
MIN	2.0	2.2	.60	.30	.00	.90	4.0	2.6	2.5	2.1	2.3	3.7
CFSM	.01	.01	.004	.002	.001	.07	.03	.04	.02	.06	.03	.02
IN.	.01	.01	.00	.00	.00	.08	.04	.04	.02	.07	.04	.02
AC-FT	189	180	66	30	8.5	1110	539	583	310	1030	513	303

CAL YR 1976 TOTAL 9570.57 MEAN 25.1 MAX 370 MIN .55 CFSM .10 IN 1.34 AC-FT 18980
WTR YR 1977 TOTAL 2452.48 MEAN 6.72 MAX 103 MIN .00 CFSM .02 IN .34 AC-FT 4860

FLOYD RIVER BASIN

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06600300 WEST BRANCH FLOYD RIVER NEAR STRUBLE, IA

LOCATION.--Lat 42°55'15", long 95°10'30", in NE1/4 NE1/4 sec.32, T.94 N., R.45 W., Sioux County, Hydrologic Unit 10230002, on right bank at downstream side of bridge on county highway 862, 0.2 mi (0.3 km) west of U.S. Highway 75, 0.8 mi (1.3 km) downstream from Orange City slough, 2.2 mi (3.5 km) northeast of Struble, 14 mi (23 km) upstream from Floyd River, and at mile 39.3 (63.2 km).

DRAINAGE AREA.--181 mi² (469 km²).

PERIOD OF RECORD.--October 1955 to current year. Prior to December 1955, monthly discharge only, published in WSP 1730.

GAGE.--Water-stage recorder. Datum of gage is 1,239.40 ft (377.769 m) above mean sea level (State Highway Commission benchmark).

REMARKS.--Records fair except those for winter period and periods of no gage-height record Aug. 18-29, Aug. 30 to Sept. 30, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--22 years, 28.5 ft³/s (0.807 m³/s), 2.14 in/yr (54 mm/yr), 20,650 acre-ft/yr (25.5 hm³/yr); median of yearly mean discharges, 23 ft³/s (0.66 m³/s), 1.7 in/yr (43 mm/yr), 16,700 acre-ft/yr (20.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,000 ft³/s (228 m³/s) Mar. 28, 1962, gage height, 15.63 ft (4.764 m); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 273 ft³/s (7.73 m³/s) May 27, gage height, 5.45 ft (1.966 m), no peak above base of 400 ft³/s (11.3 m³/s); no flow Jan. 9 to Feb. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	.86	.35	.15	.00	.20	1.4	.96	1.8	.45	.47	.07
2	1.5	.77	.35	.10	.00	.20	1.9	.89	1.6	.41	19	.50
3	1.4	.86	.35	.08	.00	.20	3.4	1.5	1.5	.30	14	.40
4	2.2	.86	.35	.06	.00	.20	2.1	1.6	1.3	.20	1.9	.30
5	2.8	.84	.35	.05	.00	.20	1.9	1.3	1.2	.10	1.1	.20
6	1.6	.62	.24	.04	.00	.30	1.0	.93	.94	.29	.86	.15
7	1.2	.80	.33	.03	.00	.40	1.6	.82	.95	.31	.96	1.0
8	3.0	.80	.33	.02	.00	1.0	1.4	.83	.85	.71	.77	.50
9	2.1	.80	.33	.00	.00	10	1.4	.92	.79	.35	.96	.40
10	2.2	.80	.33	.00	.00	50	1.3	.81	.61	.22	.79	.20
11	1.6	.75	.33	.00	.00	150	1.4	.71	.63	1.6	.81	.15
12	1.4	.60	.33	.00	.00	60	1.6	.72	.64	.63	.76	.80
13	1.4	.50	.33	.00	.00	20	2.0	.67	1.2	.42	.67	.40
14	1.2	.50	.34	.00	.00	10	2.3	.69	.98	.17	.64	.30
15	1.1	.50	.35	.00	.00	6.0	1.9	.72	.71	.35	.71	.20
16	1.1	.50	.36	.00	.00	3.9	1.8	.78	.83	.26	.81	.15
17	1.3	.55	.39	.00	.00	2.8	1.4	.92	1.4	.39	1.1	.30
18	1.6	.60	.40	.00	.00	2.2	1.3	.79	.91	.18	.80	.20
19	2.1	.70	.38	.00	.00	2.1	1.2	.88	.38	.07	.60	.15
20	1.6	.70	.35	.00	.02	1.8	1.3	1.7	.35	.05	.50	.10
21	1.5	.65	.34	.00	.05	2.1	1.5	5.8	.50	.32	.40	.09
22	1.1	.60	.33	.00	.10	1.9	1.6	12	.53	.21	.35	.10
23	1.1	.50	.33	.00	.20	1.3	1.1	4.8	1.0	.37	.30	.30
24	1.5	.50	.33	.00	.20	1.2	.92	1.7	.62	.23	.25	.20
25	1.2	.60	.33	.00	.20	1.2	.82	2.5	.39	.81	.24	.15
26	1.1	.40	.33	.00	.20	1.2	.80	1.9	.30	.80	.18	.10
27	.88	.43	.33	.00	.20	1.2	.85	.76	.30	.29	.14	.09
28	.88	.40	.33	.00	.20	1.5	.91	14	.34	.11	.11	.09
29	.96	.38	.30	.00	---	1.9	.88	4.7	.22	4.4	.09	.08
30	.96	.36	.25	.00	---	1.9	.88	2.8	.04	2.2	.08	1.0
31	.77	---	.20	.00	---	1.5	---	2.2	---	1.1	.08	---
TOTAL	45.51	18.83	10.36	.53	1.37	338.40	44.66	147.64	24.62	217.37	58.43	8.67
MEAN	1.47	.63	.33	.017	.049	10.9	1.48	4.76	.82	7.01	1.63	.29
MAX	3.0	.86	.40	.15	.20	11.0	3.4	.76	1.6	.61	.19	1.0
MIN	.77	.36	.20	.00	.00	.20	.67	.73	.06	.06	.00	.01
CFSH	.008	.003	.002	.000	.006	.06	.008	.03	.005	.04	.009	.002
IN.	.91	.00	.00	.00	.00	.07	.01	.03	.01	.04	.01	.00
AC-FT	99	37	21	1.1	2.7	671	89	293	49	431	100	17

CAL YR 1976 TOTAL 4967.22 MEAN 13.6 MAX 500 MIN .20 CFSH .08 IN 1.02 AC-FT 9650
VTR YR 1977 TOTAL 908.39 MEAN 2.49 MAX 150 MIN .00 CFSH .01 IN .19 AC-FT 1600

08600500 FLOYD RIVER AT JAMES, 1A

LOCATION.--Lat 42°34'36", long 96°18'43", in SE1/4 SE1/4 sec.30, T.90 N., R.46 W., Plymouth County, Hydrologic Unit 10230002, on right bank at downstream side of bridge on county highway C79, 6.2 mi (0.3 km) east of James, 14.3 mi (23.0 km) downstream from West Branch Floyd River, and at mile 9.5 (15.3 km).

DRAINAGE AREA.--882 mi² (2,284 km²).

PERIOD OF RECORD.--December 1934 to current year.

REVISED RECORDS.--VSP 1240: 1935 (M), 1936, 1937-38 (M), 1942, 1945. VSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,092.59 ft (333.021 m) above mean sea level. Prior to Sept. 11, 1938, June 9 to Nov. 5, 1953, and Oct. 1, 1955, to May 22, 1957, nonrecording gage and May 23, 1957, to Sept. 30, 1970, water-stage recorder at same site at datum 10.0 ft (3.048 m) higher.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--42 years (water years 1936-77), 173 ft³/s (4,899 m³/s), 2.65 in/yr (68 mm/yr), 125,300 acre-ft/yr (154 hm³/yr); median of yearly mean discharges, 140 ft³/s (3,96 m³/s), 2.2 in/yr (56 mm/yr), 101,000 acre-ft/yr (125 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 71,500 ft³/s (2,020 m³/s) June 8, 1953, gage height, 25.3 ft (7.71 m), from floodmarks, datum then in use, from rating curve extended above 16,000 ft³/s (453 m³/s) on basis of contracted-opening and flow-over-embankment measurement of peak flow; minimum daily, 0.90 ft³/s (0.025 m³/s) Jan. 10-22, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage and discharge since 1892, that of June 8, 1953, from information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,720 ft³/s (48.7 m³/s) July 24, gage height, 15.14 ft (4.615 m), no peak above base of 2,500 ft³/s (70.8 m³/s); minimum daily, 0.90 ft³/s (0.025 m³/s) Jan. 10-22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	17	12	3.0	1.0	10	43	22	39	23	20	18
2	15	16	11	2.2	1.0	10	50	22	35	14	19	15
3	14	15	11	1.8	1.1	10	52	19	34	10	15	19
4	14	14	11	1.5	1.1	10	50	22	33	8.1	21	24
5	15	14	10	1.4	1.1	11	48	23	29	6.8	15	14
6	13	15	9.6	1.2	1.1	13	44	20	22	30	14	12
7	14	15	9.2	1.1	1.1	20	39	21	21	85	19	29
8	14	12	8.8	1.0	1.2	40	36	22	19	488	16	23
9	14	15	8.4	1.0	1.8	60	34	21	16	287	125	26
10	15	15	8.2	.90	2.5	100	34	19	14	89	35	16
11	15	10	8.0	.90	3.3	200	29	17	15	81	33	13
12	12	9.5	8.0	.90	3.5	500	28	16	14	114	29	150
13	12	11	8.0	.90	3.2	400	40	16	14	99	25	20
14	13	15	8.0	.90	2.8	250	38	15	14	72	24	10
15	11	20	8.2	.90	2.5	150	34	14	13	45	30	13
16	11	27	8.2	.90	2.5	104	31	13	28	30	44	11
17	12	30	8.4	.90	2.7	86	30	12	41	22	24	11
18	13	29	9.0	.90	3.0	72	29	14	50	22	21	17
19	15	25	8.6	.90	3.5	69	28	15	34	25	34	13
20	16	24	7.9	.90	4.0	54	29	43	18	19	45	12
21	15	18	7.0	.90	6.0	47	32	35	14	20	42	12
22	14	17	6.6	.90	8.0	44	27	41	16	24	31	12
23	14	16	6.4	1.0	10	41	22	178	433	20	27	14
24	16	30	6.4	1.0	12	37	19	82	57	888	24	22
25	15	33	6.4	1.0	12	34	19	50	26	74	22	15
26	16	22	6.4	1.0	12	35	20	35	18	121	22	13
27	17	17	6.4	1.0	12	33	20	190	15	116	20	14
28	19	18	6.0	1.0	11	37	20	279	16	63	18	13
29	19	13	5.6	1.0	---	55	20	74	13	39	17	32
30	19	12	5.2	1.0	---	47	22	58	86	25	15	18
31	18	---	4.0	1.0	---	42	---	54	---	22	21	---
TOTAL	466	545.8	247.8	35.00	127.0	2611	965	1461	1197	2764.9	854	655
MEAN	14.7	18.2	7.99	1.13	4.54	84.2	32.2	47.1	39.9	89.2	27.9	21.8
MAX	19	33	12	3.0	12	800	62	279	433	650	125	150
MIN	11	9.5	4.0	.90	1.0	10	19	12	13	6.8	14	11
CFSM	-.02	-.02	-.009	-.001	-.005	-.10	-.04	-.05	-.05	-.10	-.03	-.03
IN.	-.02	-.02	-.01	-.00	-.01	-.11	-.04	-.06	-.05	-.12	-.04	-.03
AC-FT	904	1080	492	89	282	5180	1910	2900	2370	5480	1710	1300

CAL VR 1976 TOTAL 24665.40 MEAN 67.4 MAX 910 MIN 4.0 CFSM .08 IN 1.04 AC-FT 48920
WTR VR 1977 TOTAL 11929.20 MEAN 32.7 MAX 660 MIN .90 CFSM .04 IN .50 AC-FT 23660

MISSOURI RIVER MAIN STEM

06601200 MISSOURI RIVER AT DECATUR, MO

WATER-QUALITY RECORDS

LOCATION.--Lat 42°00'28", long 95°14'29", NE1/4 SW1/4 sec. 36, T.24 N., R.10 E., Burt County, Hydrologic Unit 10230001, at bridge on State Highway 175 and 51 at Decatur, Nebraska, 6.0 mi (9.7 km) west of Onawa, Iowa and at mile 691.0 (1,111.8 km).

DRAINAGE AREA.--316,160 mi² (818,850 km²).

PERIOD OF RECORD.--Water years 1974 to current year.

REMARKS.--Water discharge estimated on basis of records at gaging station 41.3 mi (66.4 km) upstream at Sioux City. No significant inflow between gaging station and sampling site. Records of daily gage heights available in subdistrict office, USGS, Council Bluffs, Iowa.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS) (00061)	TOTAL CALCIUM (CA) (MG/L) (00918)	TOTAL MAGNESIUM (MG) (MG/L) (00927)	TOTAL SODIUM (NA) (MG/L) (00929)	TOTAL POTASSIUM (K) (MG/L) (00937)	BICARBONATE (HCO3) (MG/L) (00440)	CARBONATE (CO3) (MG/L) (00445)	ALKALINITY AS CaCO3 (MG/L) (00410)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)
OCT											
12...	1220	35400	80	20	58	4.0	187	0	153	190	12
NOV											
09...	1145	35900	53	19	54	3.8	190	0	156	190	9.0
DEC											
14...	1430	22000	63	24	69	5.0	196	0	161	200	11
JAN											
24...	1330	20000	63	24	66	4.7	177	0	145	200	11
FEB											
08...	1455	19400	53	20	56	4.0	196	0	161	190	10
MAR											
08...	1030	15400	49	19	46	4.8	180	0	150	170	10
APR											
11...	0850	33000	20	54	60	4.0	180	0	150	190	10
MAY											
11...	1230	29900	52	19	55	--	180	0	150	190	12
JUN											
07...	1130	30200	55	18	58	5.5	150	0	120	180	12
JUL											
05...	1140	32500	--	--	--	--	180	0	150	190	9.4
AUG											
08...	1230	31500	61	21	70	5.0	190	0	160	200	13
SEP											
07...	1215	30400	60	21	72	5.0	190	0	160	210	10

DATE	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL AMMONIA NITROGEN (N) (MG/L) (00610)	TOTAL ORGANIC NITROGEN (N) (MG/L) (00605)	TOTAL KJELDAHL NITROGEN (N) (MG/L) (00625)	TOTAL NITROGEN (N) (MG/L) (00600)	TOTAL NITROGEN (NO3) (MG/L) (71887)	TOTAL PHOSPHORUS (P) (MG/L) (00665)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)	DISSOLVED SOLIDS (TONS PER DAY) (70302)
OCT										
12...	.09	.03	.30	.33	.42	1.9	.06	457	.62	43700
NOV										
09...	.10	.05	.37	.42	.52	2.3	.07	443	.60	42900
DEC										
14...	.10	.04	.36	.40	.50	2.2	.06	476	.65	28300
JAN										
24...	.07	.07	.36	.43	.50	2.2	.04	483	.66	26100
FEB										
08...	.04	.08	.34	.42	.46	2.0	.09	453	.62	23700
MAR										
08...	.10	.22	.18	.40	.50	2.2	.15	434	.59	18000
APR										
11...	.10	.01	.66	.67	.77	3.4	.06	455	.62	40500
MAY										
11...	.03	.05	.39	.44	.47	2.1	.07	474	.64	38300
JUN										
07...	.01	.01	.27	.28	.29	1.3	.09	429	.58	35000
JUL										
05...	.27	.06	.21	.37	.64	2.8	.09	441	.60	38700
AUG										
08...	.03	.01	.26	.27	.30	1.3	.05	471	.64	40100
SEP										
07...	.01	.00	.27	.27	.28	1.2	.08	466	.63	38200

MISSOURI RIVER MAIN STEM
06601200 MISSOURI RIVER AT DECATUR, MO--Continued
WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL RESI- DUE (MG/L) (000500)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (000095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	DIS- SOLVED OXYGEN (MG/L) (00300)	PER- CENT SATUR- ATION (00301)	CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340)	CARBON DIOXIDE (CO2) (MG/L) (00405)	FECAL COLI- FORM 7UM-WF (COL./ 100 ML) (31625)
OCT 12...	510	580	7.4	15.0	20	10.8	111	14	12	43000
NOV 09...	542	700	8.2	5.0	25	12.0	100	8	1.9	100000
DEC 14...	731	700	7.7	.0	15	17.4	124	14	5.3	822000
JAN 24...	580	760	7.3	.0	15	15.4	110	10	14	6400
FEB 09...	499	840	7.9	.0	5.0	14.4	102	12	3.9	844000
MAR 09...	520	710	7.1	5.0	15	11.8	96	14	23	12000
APR 11...	619	710	7.1	11.0	15	10.8	101	10	23	4500
MAY 11...	523	700	7.6	18.5	20	9.0	96	8	7.2	30000
JUN 07...	508	650	7.6	22.5	25	8.9	105	23	6.0	825000
JUL 05...	553	690	7.5	26.0	38	9.2	116	47	9.1	2900
AUG 08...	574	690	7.8	24.5	17	8.8	109	15	4.8	4900
SEP 07...	529	730	8.5	23.5	18	9.1	109	9	1.0	829000

MONONA-HARRISON DITCH BASIN

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05602020 WEST FORK DITCH AT HORNICK, IA
(Formerly published as West Fork ditch at Holly Springs)

LOCATION.--Lat 42°13'37", Long 98°04'40", in SW1/4 sec. 27, T.86 N., R.45 W., Woodbury County, Hydrologic Unit 10230004, on left bank at upstream side of State Highway 141 bridge, 1.0 mi (1.6 km) east of Hornick, 2.2 mi (3.5 km) upstream from Wolf Creek, and 13.5 mi (21.7 km) north of Onawa.

DRAINAGE AREA.--403 mi² (1,044 km²).

PERIOD OF RECORD.--April 1939 to September 1969 (published as "at Holly Springs"), July 1974 to current year.

REVISED RECORDS.--WSP 1240: 1943, 1945 (M). WSP 1310: 1941 (M) 1944-46 (M). WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,045.82 ft (318.786 m) above mean sea level. Prior to June 16, 1959, nonrecording gage at site 3.0 mi (4.8 km) upstream and June 16, 1959 to Sept. 30, 1969, recording gage at site 2.2 mi (3.5 km) upstream at datum 7.0 ft (2.134 m) higher.

REMARKS.--Records good except those for winter period, which are poor. West Fork ditch is a dredged channel which diverts flow of West Fork Little Sioux River at Holly Springs 5.8 mi (9.3 km) south, thence southeast 6.5 mi (10.5 km) to a point 1.2 mi (1.9 km) west of Kennesaw, where Wolf Creek enters from left. From this point, ditch roughly parallels Little Sioux River and becomes known as Monona-Harrison ditch. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--33 years (1940-69, 1975-77), 92.4 ft³/s (2.617 m³/s), 3.11 in/yr (79 mm/yr), 66,940 acre-ft/yr (82.5 hm³/yr); median of yearly mean discharges, 82 ft³/s (2.32 m³/s), 2.8 in/yr (71 mm/yr), 59,400 acre-ft/yr (73.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,400 ft³/s (351 m³/s) Mar. 28, 1962, gage height, 22.46 ft (6.846 m), site and datum then in use; maximum gage height, 25.2 ft (7.681 m) site and datum then in use, Mar. 30, 1960, from floodmark; minimum daily discharge, 0.2 ft³/s (0.006 m³/s) July 30, Aug. 17, 1956.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,800 ft³/s (51.0 m³/s) and maximum (""):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
June 23	1945	*2,200 62.3	*10.20 4.633	Aug. 9	0900	1,830 51.8	14.09 4.295
Minimum daily discharge, 2.0 ft ³ /s (0.057 m ³ /s) Jan. 18-31.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	16	12	6.5	2.1	21	24	16	17	46	17	26
2	14	16	12	6.0	2.2	21	30	15	15	23	20	17
3	14	15	11	9.5	2.5	21	35	16	14	21	17	51
4	14	15	11	6.0	2.8	21	33	18	13	19	78	77
5	13	20	11	4.5	3.0	21	29	29	13	18	21	26
6	13	15	10	4.0	3.0	21	25	25	12	34	17	19
7	13	16	10	3.5	3.0	21	22	17	11	78	16	18
8	13	22	10	3.2	3.5	28	21	16	11	127	17	31
9	14	15	9.5	3.0	4.5	30	20	15	11	64	882	18
10	14	17	9.5	2.8	6.0	50	20	14	11	34	179	23
11	15	15	9.5	2.7	10	100	19	14	11	30	36	19
12	15	16	9.5	2.6	13	70	20	14	12	27	25	251
13	16	17	9.5	2.5	15	50	26	13	19	23	21	54
14	14	17	9.5	2.4	15	45	28	13	14	21	19	20
15	15	17	9.5	2.3	13	40	26	13	14	19	18	16
16	17	17	9.6	2.2	13	36	22	12	25	20	74	15
17	14	17	10	2.1	14	32	22	12	47	20	44	80
18	14	18	11	2.0	14	29	21	12	50	19	19	17
19	15	18	11	2.0	15	28	20	23	35	19	17	16
20	16	17	10	2.0	16	27	29	51	31	65	18	15
21	15	18	9.6	2.0	18	25	20	22	23	445	16	15
22	15	15	9.4	2.0	20	25	19	29	20	36	22	22
23	15	15	9.0	2.0	22	24	18	78	855	19	20	28
24	15	16	9.0	2.0	22	23	17	42	431	436	17	30
25	16	16	9.0	2.0	22	21	16	25	67	364	16	24
26	15	16	9.0	2.0	22	21	16	20	36	60	16	18
27	17	15	9.0	2.0	22	21	16	34	29	31	18	16
28	16	14	8.5	2.0	22	23	15	37	25	24	15	15
29	15	13	8.0	2.0	---	30	15	26	22	22	14	31
30	16	12	7.5	2.0	---	29	15	24	27	19	15	23
31	16	---	7.0	2.0	---	25	---	20	---	17	20	---
TOTAL	458	487	380.1	88.8	340.6	976	650	716	1921	2200	1740	1030
MEAN	14.8	16.2	9.68	2.85	12.2	31.5	21.7	23.1	64.0	71.0	56.1	34.3
MAX	17	22	12	6.5	22	100	35	78	855	445	882	251
MIN	13	12	7.0	2.0	2.1	21	16	12	11	17	14	15
CFSH	.04	.04	.02	.007	.03	.08	.05	.05	.16	.18	.14	.09
IN.	.04	.04	.03	.01	.03	.09	.06	.07	.18	.20	.16	.10
AC-FT	908	966	595	176	675	1940	1290	1420	3810	4360	3450	2040

CAL YR 1976 TOTAL 12586.1 MEAN 34.3 MAX 388 MIN 7.0 CFSH .09 IN 1.16 AC-FT 24910
WTR YR 1977 TOTAL 10907.6 MEAN 29.9 MAX 882 MIN 2.0 CFSH .07 IN 1.01 AC-FT 21640

MONONA-HARRISON DITCH BASIN

06602400 MONONA-HARRISON DITCH NEAR TURIN, IA

LOCATION.--Lat 41°57'52", long 95°59'30", in NW1/4 SE1/4 sec.22, T.83 N., R.44 W., Monona County, Hydrologic Unit 10230004, on left pier at downstream side of bridge on county highway E54, 1.0 mi (1.6 km) west of gaging station on Little Sioux River near Turin, 5 mi (8.4 km) southwest of Turin, 5.2 mi (8.4 km) northeast of Blencoe, and 12.5 mi (20.1 km) upstream from mouth.

DRAINAGE AREA.--900 mi² (2,331 km²).

PERIOD OF RECORD.--April 1939 to current year. Records for April 1939 to January 1958 not equivalent owing to diversion from Little Sioux River through equalizer ditch 1.5 mi (2.4 km) upstream. Prior to May 1942, published as "near Blencoe".

GAGE.--Water-stage recorder. Datum of gage is 1,015.00 ft (309.372 m) above mean sea level (Corps of Engineers bench mark). Prior to May 7, 1942, non-recording gage at site 4.8 mi (7.7 km) downstream at datum 5.40 ft (1.646 m) lower. May 7, 1942, to Oct. 13, 1953, nonrecording gage and Oct. 14, 1953 to Sept. 30, 1976, recording gage at same site at datum 5.00 ft (1.524 m) higher.

REMARKS.--Records good except those above 200 ft³/s (5.66 m³/s), which are fair, and those for winter period, which are poor. Monona-Harrison ditch is a dug channel and is a continuation of West Fork ditch, paralleling the Little Sioux River, and discharging into the Missouri River 1.5 mi (2.4 km) upstream from the mouth of the Little Sioux River. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--19 years, 206 ft³/s (5.834 m³/s), 3.27 in/yr (83 mm/yr), 149,200 acre-ft/yr (184 hm³/yr); median of yearly mean discharges, 200 ft³/s (5.66 m³/s), 3.2 in/yr (81 mm/yr), 145,000 acre-ft/yr (180 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,900 ft³/s (564 m³/s) Feb. 19, 1971, gage height, 23.03 ft (7.020 m); minimum daily, 0.5 ft³/s (0.24 m³/s) Jan. 3-11, 1959.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft³/s (70.6 m³/s) and maximum ("s")

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
June 24	0500	2,750 77.9	14.01 4.453	Aug. 9	1900	*6,510 156	*18.37 5.699

Minimum daily discharge, 10 ft³/s (0.51 m³/s) Feb. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	33	24	26	25	32	41	29	40	99	44	59
2	36	32	24	26	25	26	48	28	35	81	49	44
3	34	31	25	26	26	41	80	30	32	55	45	111
4	34	30	27	25	27	36	71	38	30	44	89	486
5	31	30	29	26	26	26	48	38	27	43	181	84
6	31	34	28	25	25	34	44	56	26	39	66	48
7	32	34	27	26	25	38	42	38	24	187	45	42
8	31	33	26	26	27	48	38	32	24	392	42	55
9	32	36	26	26	29	122	38	31	23	672	2170	52
10	31	36	26	26	27	139	39	31	25	138	1920	36
11	32	32	26	26	25	129	38	31	22	72	285	40
12	33	30	26	26	23	200	36	30	22	122	141	234
13	32	28	27	26	21	165	49	29	25	58	93	369
14	33	30	28	26	20	98	55	38	35	36	71	86
15	30	32	29	26	19	66	57	31	36	31	67	54
16	33	33	30	25	18	57	48	34	32	30	125	43
17	33	33	30	25	19	47	45	35	67	30	188	194
18	31	38	29	24	20	43	38	38	187	28	68	164
19	32	36	28	24	21	39	60	36	79	24	51	65
20	31	36	27	24	22	37	52	67	57	29	45	52
21	32	33	26	24	23	36	40	57	43	1650	43	48
22	33	28	25	24	27	23	42	47	35	792	40	46
23	32	26	25	24	37	32	37	81	312	162	50	67
24	32	26	26	24	27	35	36	89	1860	633	43	82
25	31	30	27	24	37	35	35	66	301	1380	39	85
26	32	29	27	25	42	36	32	50	119	220	40	57
27	32	27	27	25	35	35	30	63	88	193	40	46
28	32	26	27	26	39	38	30	126	72	78	36	46
29	33	25	26	25	---	46	27	97	61	63	33	101
30	32	24	26	25	---	59	27	56	60	55	36	91
31	33	---	26	25	---	46	---	45	---	50	62	---
TOTAL	1006	931	830	792	737	1853	1313	1478	3720	7302	8248	2989
MEAN	32.5	31.0	26.8	25.2	26.3	59.6	43.8	47.7	124	236	202	99.5
MAX	40	38	30	26	42	200	80	126	1860	1650	2170	486
MIN	30	24	24	24	18	26	27	28	22	24	33	36
CFSM	.04	.03	.03	.03	.03	.07	.06	.06	.14	.26	.22	.11
IN	.04	.04	.03	.03	.03	.08	.08	.06	.15	.30	.26	.12
AC-FT	2060	1850	1650	1650	1480	3680	2600	2930	7360	14480	12390	5930

CAL YR 1976	TOTAL	24605	MEAN 87.2	MAX 931	MIN 24	CFSM .08	IN 1.02	AC-FT 48810
WTR YR 1977	TOTAL	29189	MEAN 80.0	MAX 2170	MIN 18	CFSM .09	IN 1.21	AC-FT 57900

LITTLE SIOUX RIVER BASIN

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06605850 LITTLE SIOUX RIVER AT LINN GROVE, IA

LOCATION.--Lat 42°53'24", long 95°14'20", in SW1/4 SW1/4 sec.6, T.93 N., R.37 W., Buena Vista County, Hydrologic Unit 10230003, on right bank at downstream side of bridge on State Highway 264, in Linn Grove, Iowa, and at mile 123.7 (199.0 km).

DRAINAGE AREA.--1,548 mi² (4,009 km²).

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,223.60 ft (372.95 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

AVERAGE DISCHARGE.--5 years, 405 ft³/s (11.47 m³/s), 3.55 in/yr (90 mm/yr), 293,400 acre-ft/yr (362 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,620 ft³/s (244 m³/s) Apr. 29, 1975; gage height, 17.95 ft (5.441 m); minimum daily, 0.70 ft³/s (0.020 m³/s) Feb. 4, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 930 ft³/s (26.3 m³/s) Mar. 14, gage height, 7.76 ft (2.365 m), no peak above base of 1,500 ft³/s (42.5 m³/s); minimum daily, 0.70 ft³/s (0.020 m³/s) Feb. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	28	7.8	6.7	1.4	28	184	101	74	46	22	28
2	20	28	8.1	6.5	1.1	37	182	96	62	39	18	28
3	18	26	8.4	6.3	.98	60	222	94	52	36	14	28
4	17	24	8.3	6.2	.70	30	220	91	47	35	13	28
5	16	24	8.1	6.0	.84	24	198	103	42	30	12	27
6	16	23	7.9	5.5	1.2	19	173	104	36	31	10	23
7	16	23	7.6	5.1	1.6	19	156	94	32	47	9.8	39
8	16	21	7.6	4.7	1.9	34	148	87	30	42	9.6	40
9	16	21	7.5	4.4	2.4	80	136	86	28	36	8.4	42
10	16	22	7.4	4.0	3.0	144	123	90	23	36	8.8	40
11	16	20	7.4	3.7	3.1	300	112	80	22	50	9.5	38
12	17	17	7.4	3.4	3.4	640	111	72	22	44	9.5	32
13	17	16	7.4	3.2	3.3	790	198	65	20	43	8.6	28
14	17	19	7.5	2.9	3.2	888	251	63	19	38	8.3	23
15	16	20	7.6	2.7	3.0	564	222	59	18	35	16	19
16	16	21	7.6	2.5	3.2	367	200	58	58	30	119	16
17	16	22	7.6	2.3	3.7	273	193	56	80	35	175	21
18	16	26	7.3	2.1	4.4	236	167	52	98	49	144	19
19	20	27	7.3	2.0	5.3	202	190	49	140	55	111	23
20	21	27	7.3	1.8	6.2	168	208	52	145	47	80	21
21	24	28	7.1	1.7	7.3	150	218	54	128	55	64	17
22	26	24	7.0	1.5	8.7	132	232	55	111	38	51	16
23	26	23	7.0	1.4	10	130	208	56	96	29	42	21
24	32	23	7.1	1.3	12	123	182	57	82	24	37	25
25	34	28	7.3	1.2	14	115	163	56	73	22	33	27
26	35	28	7.9	1.2	17	111	149	51	64	20	31	30
27	30	17	7.7	1.2	20	110	138	52	56	18	28	28
28	27	15	7.6	1.2	23	118	128	56	49	26	26	24
29	26	12	7.3	1.3	---	145	116	51	49	28	23	23
30	27	9.6	7.1	1.3	---	178	105	50	53	33	21	22
31	28	---	6.9	1.3	---	166	---	61	---	27	26	---
TOTAL	660	659.6	233.1	96.6	165.82	6463	5194	2150	1809	1124	1188.5	796
MEAN	21.3	22.0	7.52	3.12	5.92	208	173	69.4	60.3	36.3	38.3	26.5
MAX	35	28	8.4	6.7	23	888	251	104	145	55	175	42
MIN	15	9.6	6.9	1.2	.70	19	106	49	18	18	8.3	16
CFSM	.81	.81	.005	.002	.004	.13	.11	.05	.04	.02	.03	.02
IN	.82	.82	.01	.05	.05	.16	.12	.05	.04	.03	.03	.02
AC-FT	1310	1310	462	192	329	12828	10300	4260	3590	2230	2360	1580

CAL YR 1976 TOTAL 65008.70 MEAN 178 MAX 1540 MIN 6.9 CFSM .12 IN 1.56 AC-FT 128900
WTR YR 1977 TOTAL 20539.62 MEAN 56.3 MAX 888 MIN .70 CFSM .04 IN .49 AC-FT 40740

LITTLE SIOUX RIVER BASIN

06606600 LITTLE SIOUX RIVER AT CORRECTIONVILLE, IA

LOCATION.--Lat 42°28'20", Long 95°47'49", in NE1/4 NW1/4 sec.1, T.88 N., R.43 W., Woodbury County, Hydrologic Unit 10230003, on right bank 10 ft (3 m) upstream from bridge on State Highway 31, 0.3 mi (0.5 km) upstream from Bacon Creek, 0.5 mi (0.8 km) west of Correctionville, 0.8 mi (1.3 km) downstream from Pierson Creek, and at mile 56.0 (90.1 km).

DRAINAGE AREA.--2,500 mi² (6,475 km²).

PERIOD OF RECORD.--May 1918 to July 1925, October 1928 to July 1932, June 1936 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 856: 1919, WSP 1240: 1924-25, 1931, 1932 (M), 1937, 1945 (M), 1947 (M), 1949 (M). WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,095.49 ft (334.210 m) above mean sea level. May 28, 1918, to July 1, 1925 and Oct. 29, 1928 to July 15, 1929, nonrecording gage 0.2 mi (0.3 km) downstream at datum 1.25 ft (0.381 m) lower. July 16, 1929, to July 2, 1932, and June 15, 1936, to Nov. 7, 1938, nonrecording gage at present site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--50 years (1918-24, 1928-31, 1936-77), 685 ft³/s (19.40 m³/s), 3.72 in/yr (94 mm/yr), 496,300 acre-ft/yr (612 km³/yr); median of yearly mean discharge, 540 ft³/s (15.3 m³/s), 2.8 in/yr (74 mm/yr), 391,000 acre-ft/yr (492 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,800 ft³/s (844 m³/s) Apr. 7, 1955, gage height, 25.86 ft (7.882 m); minimum daily, 2.6 ft³/s (0.074 m³/s) July 17, 25, 1936, caused by construction dam above gage.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 23 or 24, 1891, reached a stage of 29.34 ft (8.943 m), present datum, from levels to floodmark by Soil Conservation Service (discharge not determined).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,840 ft³/s (137 m³/s) June 23, gage height, 15.06 ft (4.590 m) at 0845 hours, no other peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 9.5 ft³/s (0.27 m³/s) Jan. 2 to Feb. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	64	36	10	9.5	30	255	192	157	134	120	160
2	47	62	35	9.5	10	30	225	175	128	165	110	130
3	48	59	35	9.5	10	30	356	175	120	115	110	110
4	48	60	35	9.5	11	30	356	195	115	93	180	100
5	44	58	33	9.5	10	30	356	395	104	78	120	90
6	43	56	31	9.5	10	28	338	224	92	170	90	80
7	42	55	29	9.5	10	28	310	200	83	219	85	91
8	42	51	28	9.5	10	80	281	184	77	295	85	84
9	42	51	27	9.5	12	100	255	167	72	208	1100	81
10	42	55	26	9.5	15	200	235	150	71	148	350	104
11	42	45	25	9.5	18	800	214	140	67	136	78	105
12	42	35	25	9.5	17	1500	202	141	67	145	70	100
13	41	38	25	9.5	17	1300	240	135	67	145	65	105
14	40	40	26	9.5	16	1050	258	126	64	131	60	95
15	40	45	26	9.5	14	900	304	120	60	125	60	90
16	40	40	27	9.5	14	999	340	114	64	115	500	85
17	41	49	27	9.5	18	800	320	111	131	110	200	90
18	41	54	33	9.5	17	600	304	105	256	130	140	120
19	45	53	33	9.5	19	450	403	101	199	170	160	80
20	47	58	28	9.5	21	350	299	101	158	350	180	75
21	49	47	21	9.5	25	280	328	110	143	1000	300	70
22	49	45	19	9.5	35	240	330	143	152	500	250	200
23	52	47	17	9.5	40	230	320	120	1800	250	160	170
24	64	50	16	9.5	38	225	318	116	451	1100	130	200
25	75	60	16	9.5	35	220	295	110	227	463	120	130
26	71	60	16	9.5	33	210	270	104	176	302	110	110
27	75	35	16	9.5	32	210	252	134	148	183	100	90
28	72	45	14	9.5	31	220	234	196	125	160	90	100
29	72	40	13	9.5	---	220	216	247	113	150	85	128
30	71	37	12	9.5	---	250	205	221	117	130	90	119
31	65	---	11	9.5	---	261	---	195	---	120	400	---
TOTAL	1575	1502	761	295.0	945.5	11881	8730	4950	5601	7540	5699	3292
MEAN	50.8	50.1	24.5	9.52	19.5	383	291	160	187	243	184	110
MAX	75	64	35	10	40	1500	403	395	1800	1100	1100	200
MIN	40	35	11	9.5	9.5	28	202	101	60	78	60	70
CFSM	.02	.02	.01	.004	.008	.15	.12	.06	.08	.10	.07	.04
IN	.02	.02	.01	.00	.01	.18	.13	.07	.08	.11	.08	.05
AC-FT	3120	2980	1510	505	1080	23570	17320	9820	11110	14960	11300	6530

CAL YR 1976 TOTAL 113873.0 MEAN 311 MAX 1830 MIN 11 CFSM .12 IN 1.69 AC-FT 225900
WTR YR 1977 TOTAL 52371.5 MEAN 143 MAX 1800 MIN 9.5 CFSM .06 IN .78 AC-FT 103900

LITTLE SIOUX RIVER BASIN

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06607200 MAPLE RIVER AT MAPLETON, IA

LOCATION.--Lat 42°09'28", long 95°48'27", in SE1/4 SE1/4 sec.23, T.85 N., R.43 W., Monona County, Hydrologic Unit 10230005, on right bank on downstream side of bridge on State Highway 175, 0.5 mi (0.8 km) southwest of Mapleton, 0.8 mi (1.3 km) downstream from Wilsey Creek, 2.0 mi (3.2 km) upstream from McClarey Creek, and 16.0 mi (25.7 km) upstream from mouth.

DRAINAGE AREA.--669 mi² (1,732 km²).

PERIOD OF RECORD.--October 1941 to current year.

REVISED RECORDS.--WSP 1310: 1942 (M), 1946 (M), 1948 (M). WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,085.86 ft (330.970 m) above mean sea level. See WSP 1730 for history of changes prior to Sept. 20, 1956.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--35 years, 225 ft³/s (6.372 m³/s), 4.57 in/yr (115 mm/yr), 163,000 acre-ft/yr (201 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,700 ft³/s (445 m³/s) Feb. 19, 1971, gage height, 15.17 ft (4.624 m); maximum gage height, 22.1 ft (6.74 m) June 12, 1950; no flow Sept. 21, 22, 1945 caused by temporary dam above gage.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
July 20	2215	163	2.996	Aug. 9	1515	4,480 127	0.75 2.667
July 24	0700	4,980 141	9.19 2.801				

Minimum daily discharge, 3.7 ft³/s (0.10 m³/s) Jan. 30 to Feb. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	36	18	8.0	3.7	21	65	33	80	43	40	193
2	30	36	17	7.0	3.8	20	177	32	37	40	41	97
3	28	34	17	6.5	3.9	20	194	32	32	39	41	85
4	30	36	17	6.0	4.0	20	145	53	30	36	40	75
5	31	31	17	5.5	4.0	20	112	77	26	33	44	63
6	31	32	16	5.4	4.0	22	90	58	24	32	40	58
7	31	33	16	5.2	4.0	30	78	64	22	55	38	57
8	30	30	16	5.0	4.2	50	68	56	21	54	37	63
9	30	36	16	4.8	5.5	90	60	47	23	41	2550	58
10	30	36	16	4.6	6.5	150	53	40	22	35	793	56
11	33	31	15	4.5	7.0	248	46	33	27	37	213	56
12	32	15	15	4.4	8.0	359	43	31	30	36	146	242
13	32	20	15	4.3	8.5	265	93	35	42	34	118	282
14	29	30	15	4.2	8.2	156	87	32	44	33	101	113
15	30	33	15	4.1	8.0	115	75	29	35	40	135	82
16	29	37	14	4.0	8.0	90	73	25	37	33	172	69
17	29	38	14	4.0	8.5	77	68	24	58	32	154	64
18	32	40	14	4.0	9.0	72	64	23	50	36	122	61
19	38	43	14	4.0	10	67	81	24	50	44	110	56
20	41	41	14	4.0	12	66	62	37	53	501	99	55
21	39	42	14	4.0	15	60	61	45	54	685	152	53
22	38	28	14	4.0	20	56	60	92	46	297	158	69
23	38	32	14	4.0	23	55	53	45	1120	168	125	85
24	40	34	15	4.0	25	53	51	34	576	1730	104	82
25	44	41	16	4.0	25	51	47	28	242	300	94	67
26	43	42	16	3.9	24	53	45	30	108	150	90	62
27	41	30	16	3.9	23	52	41	52	72	90	86	59
28	38	25	14	3.8	22	55	41	156	57	75	80	55
29	38	21	12	3.8	---	101	38	133	49	59	78	63
30	40	19	10	3.7	---	89	39	106	49	50	75	68
31	37	---	9.0	3.7	---	72	---	67	---	44	231	---
TOTAL	1063	982	481.0	142.4	307.8	2865	2214	1573	3088	4882	6306	2548
MEAN	34.3	32.7	14.9	4.59	11.0	86.0	73.8	50.7	103	187	203	84.9
MAX	44	43	18	8.0	25	359	194	156	1120	1730	2550	282
MIN	28	15	9.0	3.7	20	38	23	21	32	37	37	53
CFSM	.05	.05	.02	.007	.02	.12	.11	.08	.15	.24	.30	.13
IN.	.06	.06	.03	.01	.02	.16	.12	.09	.17	.27	.35	.14
AC-FT	2110	60	914	282	611	5290	4390	3120	6130	9680	12510	5050

CAL YR 1976	TOTAL	31733.0	MEAN	86.7	MAX	929	MIN	9.0	CFSM	.13	IN	1.76	AC-FT	62940
WTR YR 1977	TOTAL	29232.2	MEAN	71.9	MAX	2550	MIN	3.7	CFSM	.11	IN	1.46	AC-FT	52030

LITTLE SIOUX RIVER BASIN

08607500 LITTLE SIOUX RIVER NEAR TURIN, IA

LOCATION.--Lat 41°57'52", long 95°58'21", in NW1/4 NE1/4 sec.33, T.83 N., R.44 W., Monona County, Hydrologic Unit 10230003, on left bank on downstream side of bridge on county highway E54, 1.0 mi (1.6 km) east of gaging station on Monona-Harrison ditch near Turin, 2.5 mi (4.0 km) downstream from Maple River, 3.0 mi (5.1 km) south of Turin, 6.2 mi (10.0 km) northeast of Blencoe, and at mile 13.5 (21.7 km).

DRAINAGE AREA.--3,525 mi² (9,132 km²). Prior to Jan. 18, 1958, 4,425 mi² (11,463 km²), combined area above this station and Monona-Harrison ditch station 1.0 mi (1.6 km) west.

PERIOD OF RECORD.--January 1958 to current year. April 1939 to May 1942 at site 4.7 mi (7.6 km) downstream published as "near Blencoe", June 1942 to January 1958 at site 1,205 ft (370 m) east on old river channel; records not equivalent owing to diversion into Monona-Harrison ditch through equalizer ditch 1.5 mi (2.4 km) upstream.

GAGE.--Water-stage recorder. Datum of gage is 1,019.850 ft (310.850 m) above mean sea level (Corps of Engineers bench mark). Prior to July 15, 1958, nonrecording gages near present site at different datums. July 15 to Sept. 3, 1958, nonrecording gage at present site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--19 years, 1,041 ft³/s (29.48 m³/s), 4.01 in/yr (102 mm/yr), 784,700 acre-ft/yr (930 km³/yr); median of yearly mean discharges, 807 ft³/s (22.9 m³/s), 3.1 in/yr (79 mm/yr), 585,000 acre-ft/yr (720 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 30,000 ft³/s (850 m³/s) Feb. 19, 1971, gage height, 27.44 ft (8.364 m), backwater from ice; minimum daily, 17 ft³/s (0.48 m³/s) Jan. 18-20, Jan. 28 to Feb. 1, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s (127 m³/s) and maximum (""):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
June 23	2300	4,600 136	15.14 4.615	Aug. 9	2015	*7,200 206	*18.00 5.486

Minimum daily discharge, 17 ft³/s (0.48 m³/s) Jan. 18-20, Jan. 28 to Feb. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	94	118	76	21	17	88	393	266	249	203	176	811
2	90	116	72	20	18	90	488	248	219	190	178	277
3	85	109	70	19	19	84	667	249	198	229	161	232
4	80	101	70	19	20	90	589	256	176	197	163	201
5	78	105	66	19	20	100	539	299	150	167	253	176
6	82	109	62	19	20	120	502	450	137	160	176	196
7	78	105	60	19	20	209	450	323	143	304	139	139
8	78	107	58	19	22	240	409	280	118	320	132	146
9	85	107	56	19	25	288	380	253	117	278	310	183
10	84	101	56	19	29	295	365	235	102	256	3010	159
11	85	94	56	19	35	336	333	215	96	220	621	172
12	85	90	56	19	37	1430	307	199	95	179	363	201
13	84	95	56	19	35	2040	354	191	100	174	267	617
14	82	100	56	19	32	1590	371	187	121	181	213	324
15	77	110	56	19	30	1220	361	184	108	183	203	267
16	76	116	58	18	30	1190	389	168	114	186	480	147
17	77	136	62	18	32	1210	425	160	128	196	473	161
18	82	118	68	17	34	856	410	155	140	181	372	200
19	89	113	66	17	36	667	410	152	234	178	271	166
20	92	118	55	17	45	573	490	160	236	224	296	143
21	94	110	46	18	60	495	391	174	204	2980	308	138
22	94	100	40	18	60	449	394	210	193	985	525	136
23	98	97	38	18	90	405	405	255	1490	519	587	289
24	100	100	37	19	100	389	383	188	2650	1360	279	297
25	100	110	36	19	96	365	370	167	822	1570	243	244
26	114	116	38	19	92	340	349	157	414	685	224	198
27	120	100	35	18	90	323	326	179	298	356	212	178
28	118	90	35	17	88	332	307	236	248	381	181	155
29	124	85	30	17	---	385	287	294	226	245	160	170
30	122	80	25	17	---	429	277	327	210	218	161	212
31	120	---	23	17	---	383	---	296	---	193	474	---
TOTAL	2866	3153	1614	572	1252	16962	12121	7112	9732	13636	14249	6514
MEAN	92.5	105	52.1	18.5	44.7	547	404	229	324	437	460	217
MAX	124	135	76	21	100	2040	667	460	2650	2980	3150	617
MIN	75	80	23	17	17	80	277	152	95	180	132	126
CFSM	.03	.03	.02	.085	.01	.16	.12	.07	.09	.12	.13	.08
IN.	.03	.03	.02	.01	.01	.18	.13	.08	.10	.14	.15	.07
AC-FT	5680	6250	3200	1130	2480	33640	24040	14110	19300	26850	28250	12920

CAL YR 1976	TOTAL	169872	MEAN	436	MAX	2460	MIN	23	CFSM	.12	IN	1.88	AC-FT	316500
WTR YR 1977	TOTAL	89862	MEAN	245	MAX	3150	MIN	17	CFSM	.07	IN	.95	AC-FT	177900

SOLDIER RIVER BASIN

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06608500 SOLDIER RIVER AT PISGAH, IA

LOCATION.--Lat 41°49'52", long 95°55'50", in NW1/4 NE1/4 sec.14, T.81 N., R.44 W., Harrison County, Hydrologic Unit 10230001, on left bank on downstream side of bridge on county highway F20, at west edge of Pisgah, 0.4 mi (0.6 km) downstream from Cobb Creek, 0.5 mi (0.8 km) upstream from Hogger Ditch, and 13.1 mi (21.1 km) upstream from mouth.

DRAINAGE AREA.--407 mi² (1,054 km²).

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 956: 1940 (H). WSP 1240: 1940, 1941 (H), 1947. WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,036.53 ft (315.934 m) above mean sea level. Prior to Oct. 11, 1954, nonrecording gage at same site and datum with supplementary water-stage recorder operating above 8.2 ft (2.50 m) gage height Mar. 2, 1946, to Sept. 24, 1953.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--37 years, 123 ft³/s (3,433 m³/s), 4.10 in/yr (104 mm/yr), 89,110 acre-ft/yr (110 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,500 ft³/s (637 m³/s) June 12, 1950, gage height, 28.17 ft (8.586 m); minimum daily, 2 ft³/s (0.057 m³/s) Jan. 2-10, 1945.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,600 ft³/s (385 m³/s) Aug. 31, gage height, 23.85 ft (7.269 m) at 0700 hours, no other peak above base of 5,000 ft³/s (142 m³/s); minimum daily, 6.0 ft³/s (0.17 m³/s) Jan. 26 to Feb. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	21	12	7.0	6.0	23	46	23	23	77	22	356
2	19	20	11	7.0	6.0	23	85	22	18	41	30	172
3	18	19	10	7.0	6.0	30	108	23	63	33	21	988
4	17	18	9.5	7.0	6.0	35	75	24	22	32	19	236
5	17	19	9.5	7.0	6.0	40	57	67	16	28	128	90
6	18	20	9.0	7.0	6.0	50	46	105	13	25	67	60
7	14	20	8.5	7.0	6.0	60	42	66	12	23	35	58
8	15	20	8.0	7.0	6.0	100	42	38	12	21	26	59
9	16	23	8.0	7.0	6.5	148	34	31	11	20	1060	141
10	16	23	8.0	7.0	8.0	132	32	28	9.0	21	302	57
11	17	16	8.0	7.0	8.5	162	30	25	9.0	24	76	41
12	17	14	8.0	7.0	9.0	169	33	23	9.0	21	53	37
13	16	13	8.0	7.0	9.0	114	68	21	34	17	57	40
14	16	14	8.0	7.0	8.6	90	65	20	47	17	43	55
15	16	15	8.5	7.0	7.5	68	43	19	17	75	116	50
16	15	17	8.5	6.5	7.5	62	39	20	60	35	895	44
17	14	19	9.0	6.5	9.0	59	44	19	95	209	113	36
18	16	21	9.0	6.5	10	53	85	19	31	56	73	33
19	21	23	8.5	6.5	12	52	59	19	17	30	60	33
20	23	24	8.5	6.5	15	49	40	22	13	24	48	33
21	23	24	8.0	6.5	20	43	43	29	11	1200	44	30
22	22	20	8.0	6.5	22	43	44	48	12	174	78	30
23	23	22	7.5	6.5	24	42	36	44	1080	68	44	31
24	22	23	7.5	6.5	26	40	31	28	340	584	34	72
25	22	26	7.5	6.5	26	38	28	22	116	173	34	41
26	28	25	7.5	6.0	26	38	28	19	69	58	29	30
27	21	22	7.5	6.0	26	40	27	52	46	41	20	30
28	20	18	7.5	6.0	26	55	26	385	41	35	29	30
29	20	16	7.5	6.0	---	103	24	99	32	32	27	30
30	20	14	7.0	6.0	---	84	24	55	82	28	83	31
31	21	---	7.0	6.0	---	50	---	36	---	25	6340	---
TOTAL	576	597	260.0	206.0	354.6	2084	1380	1452	2350.0	3245	10016	3014
MEAN	18.6	19.9	8.39	6.65	12.7	67.2	45.0	46.8	78.2	105	323	100
MAX	28	28	12	7.0	26	169	108	385	1080	1200	6340	988
MIN	14	13	7.0	6.0	6.0	23	24	19	9.0	17	19	30
CFSM	.05	.05	.02	.02	.03	.17	.11	.12	.19	.26	.79	.25
IN.	.05	.05	.02	.02	.03	.15	.13	.13	.21	.30	.92	.28
AC-FT	1140	1180	516	409	703	4130	2740	2880	4660	6440	19070	5780

CAL YR 1976 TOTAL 16737.7 MEAN 45.7 MAX 1038 MIN 7.0 CFSM .11 IN 1.53 AC-FT 33200
WTR YR 1977 TOTAL 25534.6 MEAN 70.0 MAX 6340 MIN 6.0 CFSM .17 IN 2.33 AC-FT 50650

BOYER RIVER BASIN

08609500 BOYER RIVER AT LOGAN, IA

LOCATION.--Lat 41°38'33", long 95°46'57", in SE1/4 NW1/4 sec.19, T.79 N., R.42 W., Harrison County, Hydrologic Unit 10230007, on left bank 9 ft (3 m) downstream from Illinois Central Railroad bridge at Logan, 0.4 mi (0.6 km) downstream from Elk Grove Creek, 10.5 mi (16.9 km) upstream from Willow Creek, and 15.9 mi (25.4 km) upstream from mouth.

DRAINAGE AREA.--871 mi² (2,256 km²).

PERIOD OF RECORD.--May 1918 to July 1925, November 1937 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 986: 1938-39. WSP 1240: 1918-19, 1920 (M), 1921, 1922 (M), 1924-25, 1938 (M), 1945. WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,009.38 ft (307.559 m) above mean sea level (Chicago and Northwestern Railway Company bench mark). See WSP 1918 for history of changes prior to Oct. 18, 1960.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--45 years (water years 1919-24, 1939-77). 303 ft³/s (8.591 m³/s), 4.72 in/yr (120 mm/yr), 219,500 acre-ft/yr (271 km³/yr); median of yearly mean discharge, 270 ft³/s (7.65 m³/s), 4.2 in/yr (107 mm/yr), 196,000 acre-ft/yr (242 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,000 ft³/s (708 m³/s) Feb. 19, 1971, gage height, 22.65 ft (6.904 m), from floodmark; maximum gage height, 25.22 ft (7.687 m) Mar. 1, 1965, backwater from ice; minimum daily discharge, 1.5 ft³/s (0.042 m³/s) July 16, 1938.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,660 ft³/s (109 m³/s) Aug. 31, gage height, 11.38 ft (3.469 m), no peak above base of 5,000 ft³/s (170 m³/s); minimum daily, 2.5 ft³/s (0.071 m³/s) Jan. 18 to Feb. 2, Feb. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	38	18	9.8	2.5	70	73	34	37	62	15	828
2	26	35	17	9.7	2.5	80	72	32	29	44	18	222
3	28	32	17	9.6	2.6	90	136	37	26	28	15	1030
4	30	31	17	9.6	2.6	100	169	45	25	27	13	927
5	27	28	17	9.5	2.6	120	127	96	20	22	43	210
6	29	28	15	9.4	2.6	150	98	92	21	18	44	117
7	23	28	12	9.2	2.5	200	82	109	16	13	25	132
8	21	25	11	8.6	2.5	222	85	85	18	11	24	98
9	21	30	10	8.0	3.0	239	57	50	14	9.0	32	186
10	21	30	10	7.0	4.0	231	50	37	14	9.0	278	127
11	20	25	10	5.0	5.0	228	45	32	12	22	346	64
12	21	20	10	5.4	7.0	408	44	30	17	19	111	52
13	21	25	10	5.0	8.0	313	48	28	29	13	67	76
14	20	30	11	4.8	9.0	203	49	30	30	10	49	73
15	20	33	12	4.0	9.0	159	56	29	19	145	44	48
16	21	35	13	3.0	7.0	131	48	26	18	27	280	36
17	20	40	15	2.7	8.0	100	53	25	175	45	115	34
18	24	39	20	2.5	10	86	67	42	107	35	66	35
19	28	41	18	2.5	15	79	46	79	39	16	45	29
20	30	41	15	2.5	20	77	49	271	24	12	41	29
21	33	38	12	2.5	22	79	116	579	21	189	34	30
22	33	36	11	2.5	25	70	109	377	22	131	48	26
23	33	35	11	2.5	30	67	72	109	476	46	56	39
24	35	34	11	2.5	35	59	56	67	1440	351	45	74
25	38	39	12	2.5	45	58	47	43	345	93	39	61
26	37	40	13	2.5	50	57	41	39	208	59	32	44
27	35	28	15	2.5	55	58	38	153	103	32	31	35
28	41	23	13	2.5	60	78	37	275	137	25	28	32
29	40	20	11	2.5	---	129	34	345	61	25	19	28
30	38	19	10	2.5	---	146	33	60	42	24	22	32
31	39	---	9.8	2.5	---	97	---	48	---	18	2110	---
TOTAL	881	948	405.8	156.0	445.5	4184	2008	3306	3538	1580.0	4135	4754
MEAN	28.4	31.5	13.1	5.03	15.9	135	65.9	107	118	51.0	133	158
MAX	41	41	20	9.8	60	408	169	579	1440	351	2110	1030
MIN	20	19	9.8	2.5	25	57	33	25	12	9.0	13	26
CFSM	.03	.04	.02	.006	.02	.18	.08	.12	.14	.06	.15	.18
IN	.04	.04	.02	.01	.02	.18	.09	.14	.15	.07	.18	.20
AC-FT	1750	1880	807	309	886	8300	3980	6560	7020	3130	8200	9430

CAL YR 1976 TOTAL 33784.8 MEAN 92.3 MAX 1748 MIN 9.8 CFSM .11 IN 1.44 AC-FT 67010
WTR YR 1977 TOTAL 26343.3 MEAN 72.2 MAX 2110 MIN 2.5 CFSM .08 IN 1.13 AC-FT 52250

MISSOURI RIVER MAIN STEM

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05610000 MISSOURI RIVER AT OMAHA, NB

LOCATION.--Lat 41°15'32", long 95°55'20", in SE1/4 NW1/4 sec.23, T.15 N., R.13 E., Douglas County, Hydrologic Unit 10230000, on right bank on left side of concrete floodwall, at foot of Douglas Street, 275 ft (84 m) downstream from Interstate 480 Highway bridge in Omaha, and at mile 615.9 (991.0 km).

DRAINAGE AREA.--322,800 mi² (836,100 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1928 to current year. April 1872 to December 1899 (gage heights only) in reports of the Missouri River Commission and since January 1875, (gage heights only) in reports of the U.S. Weather Bureau.

REVISED RECORDS.--WSP 761: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 958.24 ft (292.072 m) above mean sea level. See WSP 1730 for history of changes prior to Sept. 30, 1936.

REMARKS.--Records good. Flow regulated by upstream main-stem reservoirs. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--49 years, 29,350 ft³/s (831.2 m³/s), 21,260,000 acre-ft/yr (26,200 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 395,000 ft³/s (11,200 m³/s) Apr. 18, 1952, gage height, 30.20 ft (9.205 m); minimum, about 2,200 ft³/s (62 m³/s) Jan. 6, 1937; minimum gage height observed, -2.77 ft (-0.844 m) Jan. 10, 1957, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 51,400 ft³/s (1,460 m³/s) Aug. 31, gage height, 10.37 ft (3.161 m); minimum daily, 11,800 ft³/s (326 m³/s) Jan. 31; minimum gage height observed, 2.62 ft (0.799 m) Mar. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39600	37100	34400	20600	13000	16700	33200	33100	31900	33300	36900	41500
2	39500	37400	36300	21200	15000	17200	35300	33600	31700	32600	37700	35200
3	40100	37300	38400	21500	17000	17400	36900	33500	31500	32800	38200	32700
4	40000	37600	38300	21900	18000	17600	34600	33000	31300	33400	37800	37700
5	40000	37400	34600	22500	18000	18400	33000	33400	31400	33200	37800	35000
6	39600	36800	30200	22400	17500	18300	32300	33500	31400	33100	38600	32100
7	39300	36900	27000	22000	16000	17500	32000	32800	30900	34000	37500	31600
8	37700	36700	24400	21300	18500	17700	31000	32800	30700	35800	36700	31500
9	36800	37900	22800	19800	19000	17200	31700	32100	30400	36300	36400	31600
10	36200	38200	22000	20500	19500	17700	32300	32300	31400	35900	43500	32300
11	36100	38600	22000	20900	20000	18900	31300	32100	32700	34700	39000	31800
12	36600	38100	21600	21200	20500	18300	32300	31600	34100	34300	32000	31800
13	37200	37600	21600	21300	21000	21700	33100	31800	34600	34500	32200	32600
14	37300	37200	22200	20300	21000	22300	33000	31800	35600	33100	32300	33900
15	37700	37100	21600	19800	20000	20800	32800	33600	35100	34100	33800	31600
16	37100	36500	21800	21600	18000	22300	31200	33600	34000	34100	37700	31000
17	36900	36800	21800	21400	16700	25000	31300	33100	34600	35000	37200	33000
18	36300	37300	22000	20900	16400	26200	32100	33300	35800	34900	35300	34400
19	36900	37800	22200	20700	17200	26200	32100	33700	35300	33900	31600	34100
20	37100	37900	22500	21000	17900	29200	32900	33600	33600	33500	32300	33300
21	37100	38300	22100	21000	17500	35400	33200	34900	32000	37600	36000	32600
22	37100	37400	20500	21000	17600	34300	33300	35000	32300	42700	35100	32800
23	37100	37000	21000	21000	18800	30600	32500	32900	33300	37400	35000	34200
24	37300	36700	23100	21000	19100	30600	31400	34000	41600	34800	34800	33600
25	37700	37100	21600	20000	18300	34300	31000	31700	39400	37700	34000	34100
26	37300	38000	21500	16000	17700	35000	31700	31800	31700	36900	33600	34100
27	37400	38100	22000	18000	17200	33900	33300	33000	32300	34400	33400	33700
28	38000	38000	21800	14000	16700	35000	32700	36100	32800	34400	32400	33400
29	36700	36500	21800	13000	---	35800	32200	36600	32300	34600	31300	33300
30	36600	38300	21200	12000	---	36400	32500	33700	33300	35600	32100	34300
31	36900	---	20800	11500	---	34600	---	31900	---	37000	41700	---
TOTAL	1167200	1120300	764600	608200	505100	782700	978100	1030300	999000	1085600	1102900	1004800
MEAN	37658	37340	24660	19620	16040	25250	32600	33240	33300	35020	35580	33490
MAX	40100	38600	38400	22500	21000	36600	36800	36600	41600	42700	43500	41500
MIN	36100	35300	20500	11500	13000	16700	31000	31600	30400	32600	31300	31000
AC-FT	2315000	2222000	1517000	1206000	1002000	1582000	1940000	2044000	1982000	2153000	2188000	1993000

CAL YR 1976 TOTAL 13024900 MEAN 35590 MAX 47000 MIN 13200 AC-FT 25830000
 VTR YR 1977 TOTAL 11148800 MEAN 30540 MAX 43500 MIN 11500 AC-FT 22110000

MOSQUITO CREEK BASIN

06610520 MOSQUITO CREEK NEAR EARLING, IA

LOCATION.--Lat 41°45'10", long 95°27'50", in N1/2 SE1/4 sec.11, T.80 N., R.40 W., Shelby County, Hydrologic Unit 10230006, on right bank at stream-stabilization structure 1,300 ft (396 m) downstream from bridge on State Highway 191, 0.6 mi (0.8 km) downstream from small left-bank tributary and 2.3 mi (3.7 km) southwest of Earling.

DRAINAGE AREA.--32.0 mi² (82.9 km²).

PERIOD OF RECORD.--August 1965 to current year.

GAGE.--Duplex water-stage recorder. Datum of gage is 1,222.55 ft (372.635 m) above mean sea level. Gage heights obtained of headwater (base gage) and tailwater (supplementary gage) elevations at stream-stabilization structure.

REMARKS.--Records fair except those for winter period, and periods of no gage-height record July 17 to Aug. 4 and Aug. 30 to Sept. 1, which are poor. The stabilization structure is a dam approximately 16 ft (5 m) high constructed of sheet piling and derrick stone. The crest of the cut-off piling is rectangular in shape at low stages and trapezoidal at high stages. Daily discharges computed from headwater gage readings. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--12 years, 15.2 ft³/s (0.430 m³/s), 5.45 in/yr (164 mm/yr), 11,010 acre-ft/yr (13.6 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s (340 m³/s) Sept. 11, 1972, gage height, 31.18 ft (9.504 m), from floodmarks; no flow for several days in 1970-72, 77.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximum (""):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
May 21	0015	*3,650 103	*24.45 7.452	Sept. 3	0830	1,500 42.5	22.72 6.925
July 17	----	1,170 33.1	21.34 6.050	Sept. 9	0045	2,130 60.3	22.72 6.925
Aug. 31	0600	2,200 62.3	-----				

No flow May 12-17, July 4, 5, 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.40	.71	.25	.15	.14	3.0	2.2	.03	.43	.29	.15	10
2	.30	.78	.23	.14	.14	3.5	2.5	.03	.22	.03	.15	2.0
3	.22	.78	.22	.14	.15	3.5	3.0	.03	.22	.07	.14	200
4	.71	.78	.21	.14	.15	3.5	4.0	.22	.22	.00	.20	4.0
5	.57	.78	.20	.14	.15	4.0	2.4	.57	.17	.00	23	2.0
6	.43	.78	.19	.14	.15	5.0	1.8	.43	.07	.03	1.1	1.0
7	.29	.71	.18	.14	.15	2.5	1.4	.35	.03	.03	.78	22
8	.36	.71	.17	.14	.15	1.7	1.3	.22	.07	.07	.43	8.5
9	.38	.78	.17	.14	.20	4.7	1.3	.17	.03	.07	1.1	160
10	.17	.71	.17	.14	.20	2.9	1.2	.07	.03	.12	.05	10
11	.22	.71	.17	.14	.25	3.8	1.2	.03	.00	.64	.78	8.0
12	.17	.65	.17	.14	.30	2.7	1.2	.00	.03	.29	.50	7.7
13	.12	.60	.17	.14	.30	2.5	1.2	.00	4.1	.07	.57	7.7
14	.17	.60	.18	.14	.25	2.3	1.2	.00	1.1	.00	.43	5.3
15	.17	.62	.18	.14	.20	2.2	1.2	.00	.35	.38	2.4	5.6
16	.22	.66	.19	.14	.20	2.2	1.2	.00	.35	.22	15	7.4
17	.22	.68	.19	.14	.25	2.1	1.2	.00	8.4	500	.78	8.7
18	.43	.75	.21	.14	.30	2.1	1.2	40	1.2	10	.43	9.0
19	.57	.57	.19	.14	.40	2.0	1.3	8.0	.50	2.0	.50	9.7
20	.57	.50	.18	.14	.60	2.0	1.5	142	.35	1.0	.50	14
21	.57	.47	.15	.14	.80	1.9	2.0	459	.29	.60	.80	15
22	.50	.45	.15	.14	1.0	1.8	1.1	12	.43	10	.50	17
23	.50	.42	.15	.14	1.2	1.8	.80	6.0	14	2.0	.43	26
24	.57	.38	.15	.14	1.4	1.8	.30	3.1	.78	1.0	.42	15
25	.43	.35	.15	.14	1.6	1.8	.15	1.1	.35	50	.40	4.5
26	.43	.33	.15	.14	1.9	1.9	.10	3.7	.17	5.0	.38	1.5
27	.43	.31	.17	.14	2.3	2.0	.08	11	.03	1.0	.35	.90
28	.50	.29	.16	.14	2.5	2.4	.05	2.2	.22	.50	.32	1.2
29	.50	.29	.15	.14	---	3.5	.04	.92	.17	.30	.29	1.5
30	.64	.26	.15	.14	---	3.0	.03	.71	.78	.20	.40	2.4
31	.71	---	.15	.14	---	2.5	---	.71	---	.18	500	---
TOTAL	12.45	17.40	5.52	4.35	17.33	82.6	37.55	592.50	35.13	595.07	554.80	590.60
MEAN	.40	.58	.18	.14	.62	2.66	1.26	22.3	1.17	18.9	17.9	19.7
MAX	.71	.78	.25	.15	2.5	5.0	4.0	459	14	500	500	200
MIN	.12	.26	.15	.14	.14	1.7	.03	.70	.04	.59	.14	.90
CFSM	.01	.02	.005	.004	.02	.08	.04	.81	.04	.69	.64	.69
IN.	.01	.02	.01	.01	.02	.10	.04	.75	.70	1160	1100	1170
AC-FT	25	35	11	8.6	34	164	75	1370	70	1160	1100	1170

CAL YR 1976 TOTAL 1253.04 MEAN 3.42 MAX 53 MIN .12 CFSM .11 IN 1.45 AC-FT 2490
WTR YR 1977 TOTAL 2636.50 MEAN 7.22 MAX 500 MIN .00 CFSM .23 IN 3.08 AC-FT 8230

MISSOURI RIVER MAIN STEM

185

06807000 MISSOURI RIVER AT NEBRASKA CITY, NB
(National stream-quality accounting network station)

LOCATION.--Lat 40°40'55", long 95°50'48", in NW1/4 NE1/4 sec.9, T.8 N., R.14 E., Otoe County, Hydrologic Unit 10240001, on right bank 0.7 mi (1.1 km) upstream from Vaubonsie Highway Bridge at Nebraska City, and at mile 882.6 (995.2 km).

DRAINAGE AREA.--410,00 mi² (1,062,000 km²), approximately. The 3,959 mi² (10,254 km²) in Great Divide basin are not included.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1929 to current year. Gage-height records collected in this vicinity from August 1878 to December 1899 are contained in reports of Missouri River Commission.

REVISED RECORDS.--VSP 761: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 905.36 ft (275.954 m) above mean sea level, datum of 1929, supplementary adjustment of 1954. See VSP 1918 or 1919 for history of changes prior to Apr. 1, 1953.

REMARKS.--Records good. Flow regulated by upstream main-stem reservoirs. Corps of Engineers gage height tele-meter at station.

AVERAGE DISCHARGE.--48 years, 35,160 ft³/s (995.7 m³/s), 25,470,000 acre-ft/yr (31,400 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 414,000 ft³/s (11,700 m³/s) Apr. 19, 1952; maximum gage height, 27.66 ft (8.431 m) Apr. 18, 1952; minimum discharge, 1,600 ft³/s (45.3 m³/s) Dec. 31, 1946 (discharge measurement); minimum gage height observed, -0.28 ft (-0.085 m) Dec. 24, 1960, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 64,100 ft³/s (1,820 m³/s) Sept. 1, gage height, 13.73 ft (4.185 m); maximum gage height, 17.37 ft (5.294 m) Feb. 13, backwater from ice; minimum daily discharge, 13,000 ft³/s (368 m³/s) Jan. 31; minimum gage height, 4.79 ft (1.460 m) Jan. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41300	40000	38400	23200	14000	24600	37900	38200	41600	37900	37500	57800
2	41100	40400	37700	23200	15000	23800	38400	38600	42000	36800	38200	52800
3	41100	40400	40000	23600	15800	23800	40800	39000	42300	36400	38200	49600
4	41600	40600	39500	23300	17800	23400	41500	38600	39500	36400	38400	58600
5	41300	40600	38000	23000	19000	22400	41800	40800	38800	35900	39000	56300
6	41100	40200	35000	23100	20000	24400	39700	39500	37900	35400	39500	47000
7	41100	40000	32000	23100	20000	23000	38400	38600	36600	35400	38800	41300
8	40800	39700	28900	22900	20000	22600	37900	39000	36400	36200	37500	39300
9	39700	40000	25000	21700	20000	23000	36800	38800	36400	37000	48000	37600
10	39300	40600	25200	21500	20000	23000	36800	38200	36100	37200	50000	37600
11	38200	40800	24600	22000	21000	24400	36600	37700	36600	37500	47800	36400
12	37200	41600	24800	21900	22000	25800	36800	37900	37200	36800	39000	36400
13	37900	41600	24200	21900	23000	27000	37700	38200	38000	37900	37000	36600
14	39300	40600	25200	21800	24000	28200	37900	37900	37900	36400	36400	37700
15	39500	39500	25400	21100	24000	29400	38400	37700	37800	37000	36100	37800
16	39700	40600	25800	21000	25000	27400	37500	37700	36500	37500	48000	37200
17	40000	40000	26000	21000	28000	27800	39000	37500	37500	38200	45600	37700
18	40400	39700	25800	20000	28000	28200	40400	37900	38800	38800	43000	38400
19	40400	39300	25600	19000	28000	28900	39500	38800	40000	37500	40400	38200
20	40400	40200	25600	18000	28000	28000	39300	39700	40200	36600	38400	37000
21	40400	40800	25600	18800	28000	31400	40200	40400	38200	38600	40000	37200
22	39500	40800	24600	20600	28000	37000	40000	43300	37700	43600	41800	36800
23	39700	40200	24000	21200	27800	39000	43300	48000	38200	41300	41100	39000
24	40000	40000	25800	20000	27800	37700	42000	50300	42000	38400	39000	38400
25	40400	39000	26000	20000	27800	38400	40800	45600	43800	43000	37700	38400
26	40400	40000	24800	19000	27600	40200	40600	41100	38800	40400	37000	38200
27	39700	40200	28200	17000	26200	38400	39700	40600	36400	38400	36800	37700
28	40200	39500	24800	16000	25000	39000	39500	47600	36600	37900	36800	37200
29	40000	38400	24400	15000	---	40000	38400	51000	36800	38200	37200	37000
30	39500	37500	24600	14000	---	40200	37900	47000	37500	36600	36400	37200
31	39300	---	23400	13000	---	39700	---	41300	---	37000	51200	---
TOTAL	1240500	1202800	865900	630900	650900	930100	1176600	1266500	1154100	1172200	1251800	1228100
MEAN	40020	40090	27930	20350	23240	30000	39190	40850	38470	37810	40380	40940
MAX	41600	41600	40000	23600	28000	40200	43300	51000	43800	43600	51200	58600
MIN	37200	37500	23400	13000	14000	22400	36600	37500	36100	35400	36100	36400
AC-FT	2481000	2386000	1718000	1251000	1291000	1845000	2332000	2512000	2289000	2325000	2483000	2436000

CAL YR 1976 TOTAL 14281700 MEAN 39020 MAX 61600 MIN 14300 AC-FT 28330000
WTR YR 1977 TOTAL 12769300 MEAN 34980 MAX 58600 MIN 13000 AC-FT 25330000

MISSOURI RIVER MAIN STEM

06807000 MISSOURI RIVER AT NEBRASKA CITY, NE--Continued.
(National Stream Quality Accounting Network Station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1951 to current year. Daily sediment loads August 1957 to September 1971 in reports of Corps of Engineers.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: May 1951 to current year (discontinued).

WATER TEMPERATURES: May 1951 to current year (discontinued).

SEDIMENT DISCHARGE: October 1971 to September 1976.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 994 micromhos Dec. 17, 1962; minimum daily, 273 micromhos June 17, 1964.

WATER TEMPERATURES: Maximum daily, 31°C July 26, 1977; minimum, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,220 mg/L May 19, 1974; minimum daily mean, 137 mg/L Jan. 14, 1976.

SEDIMENT LOADS: Maximum daily, 1,590,000 tons (1,440,000 tonnes) May 19, 1974; minimum daily, 4,050 tons (3,670 tonnes) Jan. 17, 1972.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 850 micromhos Jan. 22; minimum daily, 470 micromhos Sept. 3.

WATER TEMPERATURES: Maximum daily, 31°C July 26; minimum daily, 0.0°C on many days during winter period.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	660	700	625	670	750	610	600	650	600	650	700	680
2	670	690	710	710	750	590	590	660	600	650	700	630
3	690	660	610	850	780	640	660	650	580	660	700	470
4	660	660	750	700	800	650	650	680	600	680	700	550
5	660	650	710	680	810	690	640	660	620	680	700	530
6	620	690	700	710	800	650	670	650	620	680	670	550
7	680	660	580	700	760	610	650	650	620	690	700	610
8	670	650	650	670	750	640	670	650	630	700	590	690
9	670	650	740	750	720	650	670	640	650	700	600	670
10	660	650	600	700	700	660	670	660	650	700	640	680
11	660	650	650	700	710	700	670	650	680	680	550	600
12	670	650	730	730	690	660	670	660	680	700	620	680
13	670	650	800	760	700	620	670	650	670	750	650	700
14	660	650	630	640	710	640	680	650	670	700	670	740
15	660	650	780	660	700	580	700	660	670	700	680	680
16	650	700	800	710	680	600	680	660	670	680	660	670
17	660	700	790	700	710	600	670	690	670	700	660	640
18	660	710	770	800	690	600	650	690	670	670	630	680
19	670	710	590	780	690	600	650	680	670	680	640	700
20	670	710	750	800	700	610	640	630	650	700	650	680
21	660	695	780	800	650	600	630	650	650	700	650	700
22	700	700	550	850	670	610	650	630	650	680	650	700
23	660	710	760	810	640	590	620	600	650	640	640	680
24	690	740	780	770	620	570	600	580	650	690	650	700
25	700	710	750	800	600	600	610	560	640	550	660	740
26	700	700	750	700	600	600	630	580	590	660	680	750
27	700	700	740	750	600	650	650	600	610	690	700	750
28	690	700	740	710	660	630	660	560	640	690	680	710
29	660	725	700	740	---	650	660	560	630	660	680	700
30	660	725	650	720	---	670	660	560	650	680	670	700
31	660	---	690	---	---	620	---	570	---	700	540	---
MEAN	669	685	705	736	701	625	651	634	641	680	655	662
WTR YR 1977	MEAN	670	MAX	850	MIN	470						

MISSOURI RIVER MAIN STEM

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06807000 MISSOURI RIVER AT NEBRASKA CITY, NB--Continued.
(National Stream Quality Accounting Network Station)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.0	8.5	0.0	0.0	0.0	1.5	8.5	16.5	23.0	25.0	26.0	23.0
2	18.0	9.0	0.5	0.0	0.0	1.5	8.5	18.5	23.5	24.5	26.0	22.0
3	19.0	9.0	0.5	0.0	0.5	2.5	8.0	18.0	23.5	25.0	25.0	23.0
4	18.5	8.0	0.5	0.0	0.5	2.0	6.5	19.0	23.5	25.5	25.5	22.0
5	17.0	7.0	0.5	0.0	0.0	2.0	6.0	18.0	25.5	26.0	25.5	22.0
6	16.5	7.0	0.0	0.0	0.0	2.0	9.0	19.0	24.5	26.0	25.5	24.0
7	15.5	6.5	0.0	0.0	0.0	2.0	9.0	19.5	24.5	27.0	26.0	24.5
8	15.0	7.0	0.0	0.0	0.0	4.0	9.5	19.0	24.5	26.5	26.0	25.0
9	14.5	7.0	0.0	0.0	0.0	5.5	11.5	19.0	24.0	26.5	24.5	24.0
10	15.0	7.0	0.0	0.0	0.5	8.0	13.5	19.5	23.5	27.0	25.0	23.0
11	16.0	6.0	0.0	0.0	0.5	8.5	14.0	19.0	25.0	25.5	24.5	22.0
12	16.0	4.5	0.0	0.0	0.5	9.0	14.0	19.5	24.0	25.5	24.5	21.0
13	16.5	3.5	0.0	0.0	0.5	9.0	14.5	20.5	22.0	26.0	25.0	20.5
14	16.5	2.5	0.5	0.0	0.5	7.0	15.0	20.5	23.0	26.5	23.5	20.5
15	15.0	4.0	0.5	0.0	0.0	7.0	15.0	21.0	24.0	27.0	23.5	21.0
16	13.5	4.0	1.0	0.0	0.0	8.0	16.5	21.5	24.0	27.0	23.5	20.5
17	13.0	6.0	2.0	0.0	0.5	8.5	17.0	21.5	24.0	28.0	23.5	21.0
18	11.0	5.5	2.0	0.0	0.5	8.0	18.0	21.5	24.0	26.5	23.0	23.0
19	10.5	6.0	1.5	0.0	0.5	6.5	18.5	21.5	24.0	28.0	23.0	21.0
20	10.0	5.0	0.5	0.0	0.5	6.5	18.0	21.0	23.5	28.0	23.0	20.0
21	10.0	4.5	0.0	0.0	0.0	5.5	16.0	21.0	24.0	27.0	23.5	20.0
22	9.5	4.0	0.0	0.0	1.0	5.5	15.0	20.5	23.5	27.0	23.0	20.0
23	9.5	3.5	0.0	0.0	1.0	5.0	15.5	20.5	24.0	27.0	23.5	20.0
24	10.0	3.5	0.0	0.0	2.0	6.5	15.0	21.5	25.0	27.0	23.5	19.5
25	9.0	6.0	0.0	0.0	2.0	8.5	15.0	23.0	25.0	26.5	23.0	20.0
26	8.0	4.5	0.0	0.0	2.0	9.5	16.0	23.0	25.5	31.0	23.5	19.0
27	7.0	3.5	0.0	0.0	2.0	10.0	16.5	23.5	27.0	26.5	24.5	19.5
28	8.0	1.5	1.0	0.0	2.0	11.0	18.5	23.0	27.0	27.0	23.5	19.5
29	7.0	0.5	0.0	0.0	---	10.0	18.5	23.0	26.0	28.5	23.5	19.5
30	8.0	0.5	0.0	0.0	---	8.5	16.5	23.0	25.0	26.5	24.5	19.5
31	8.0	---	0.0	0.0	---	8.0	---	22.0	---	26.5	23.5	---
MEAN	13.0	5.0	0.5	0.0	0.5	6.5	13.5	20.5	24.5	26.5	24.0	21.5
WTR YR 1977	MEAN	13.0	MAX	31.0	MIN	0.0						

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	DIS- SOLVED SILICA (SI02) (MG/L) (00955)	TOTAL IRON (FE) (UG/L) (01045)	DIS- SOLVED IRON (FE) (UG/L) (01045)	TOTAL MAN- GANESE (MN) (UG/L) (01055)	SUS- PENDED MAN- GANESE (MN) (UG/L) (01054)	DIS- SOLVED MAN- GANESE (MN) (UG/L) (01055)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (00925)
OCT...	1100	40200	9.2	--	--	--	--	--	54	21
NOV...	1400	40800	9.6	--	--	--	--	--	56	20
DEC...	1240	439000	8.4	3400	20	140	140	0	58	22
JAN...	1100	24500	13	--	--	--	--	--	59	75
FEB...	1145	22000	14	--	--	--	--	--	59	20
MAR...	1330	27700	16	13000	20	590	580	10	54	18
APR...	1330	30500	11	--	--	--	--	--	55	14
MAY...	1010	37900	9.1	--	--	--	--	--	58	20
JUN...	1200	38900	--	12000	30	540	--	0	58	18
JUL...	1115	37400	9.4	--	--	--	--	--	54	18
AUG...	1230	35700	9.9	--	--	--	--	--	58	19
SEP...	1315	37500	12	9000	30	330	330	0	58	19

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WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED SODIUM (NA) (00930)	DIS- SOLVED PO- TAS- SIUM (K) (00935)	BICAR- BONATE (HCO3) (00440)	CAR- BONATE (CO3) (00445)	ALKA- LINEITY AS CACO3 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)	TOTAL NITRITE PLUS NITRATE (N) (00630)	TOTAL KJEL- DAHL NITRO- GEN (N) (00625)
OCT...										
08...	64	5.0	190	0	155	180	14	.5	.08	.55
NOV...										
02...	60	4.8	194	0	159	180	16	.5	.20	.48
DEC...										
05...	70	4.3	195	0	160	190	15	.5	.15	.53
JAN...										
03...	69	5.9	224	0	184	200	20	.5	.25	.56
FEB...										
18...	60	5.8	195	0	160	160	20	.5	.24	.77
MAR...										
14...	50	7.0	190	0	160	130	23	.4	.89	2.1
APR...										
19...	55	6.4	180	0	150	160	17	.4	.19	1.5
MAY...										
17...	65	6.0	190	0	160	180	16	.4	.10	.77
JUN...										
14...	64	6.0	180	0	150	180	18	.6	.16	1.0
JUL...										
19...	65	6.1	190	0	150	180	14	.5	.14	.85
AUG...										
15...	67	5.7	190	0	160	190	14	.6	.28	.89
SEP...										
09...	65	6.2	180	0	150	180	21	.5	.19	.67

DATE	TOTAL NITRO- GEN (N) (00600)	TOTAL NITRO- GEN (NO3) (01887)	TOTAL PHOS- PHORUS (P) (00665)	DIS- SOLVED SOLIDS (RESI- DUE AT 100 C) (MG/L) (00300)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L) (00301)	DIS- SOLVED SOLIDS (TONS PER AC-FT) (00303)	DIS- SOLVED SOLIDS (TONS PER DAY) (00302)	HARD- NESS (CA, MG) (MG/L) (00900)	NON- CAR- BONATE HARD- NESS (MG/L) (00902)	PERCENT SODIUM (00932)
OCT...										
08...	.63	2.8	.09	463	441	.63 50300		220	65	38
NOV...										
02...	.69	3.0	.11	455	443	.62 50100		220	63	36
DEC...										
05...	.68	3.0	.12	477	454	.65 --		240	75	39
JAN...										
03...	.81	3.6	.12	520	502	.71 34400		250	67	36
FEB...										
18...	1.0	4.5	.33	442	435	.60 26300		230	69	36
MAR...										
14...	2.7	12	.54	407	392	.55 30400		210	53	33
APR...										
19...	1.7	7.5	.41	418	409	.57 43500		200	47	38
MAY...										
17...	.87	3.9	.20	452	448	.61 46300		230	71	38
JUN...										
14...	1.2	5.1	.40	438	--	.60 46000		220	71	38
JUL...										
19...	.99	4.4	.20	458	437	.64 47300		210	61	40
AUG...										
15...	1.2	5.2	.21	482	458	.65 46500		220	67	39
SEP...										
09...	.88	3.8	.28	437	451	.59 44200		220	75	38

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WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	SODIUM AD- SORP- TION RATIO (00931)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (JTU) (00070)	CARBON DIOXIDE (CO2) (MG/L) (00405)	TOTAL PHYTO- PLANK- TON (CELLS PER ML) (60050)	FECAL COLI- FORM (7UM-MF COL./ 100 ML) (31625)	FECAL STREP- TOCOCCI KF AGAR (COL. PER 100 ML) (31673)	TOTAL ORGANIC CARBON (C) (MG/L) (00680)
OCT										
05...	1.9	690	8.3	15.5	20	1.5	25000	86000	2400	--
NOV										
02...	1.8	700	8.8	9.0	30	.5	5000	24000	7500	--
DEC										
06...	2.0	700	7.9	.0	10	3.9	1800	25000	16000	5.6
JAN										
03...	1.9	850	7.5	.0	8	11	810	14000	21000	--
FEB										
15...	1.7	710	7.1	.0	7	25	25000	7800	4000	--
MAR										
14...	1.5	650	7.3	8.0	80	15	--	43000	89000	11
APR										
19...	1.7	700	7.4	18.0	20	11	--	25000	19000	--
MAY										
17...	1.9	760	7.8	21.0	40	4.8	4000	24000	35000	--
JUN										
14...	1.9	670	7.7	23.0	110	5.7	20000	63000	34000	22
JUL										
19...	2.0	690	7.1	27.5	110	23	6500	47000	42000	--
AUG										
15...	2.0	750	7.6	22.5	55	7.6	3400	7400	8500	--
SEP										
09...	1.9	680	7.9	24.5	85	3.6	16000	19000	27000	4.4

DATE	TOTAL ARSENIC (AS) (UG/L) (01002)	SUS- PENDEL ARSENIC (AS) (UG/L) (01001)	DIS- SOLVED ARSENIC (AS) (UG/L) (01000)	TOTAL CAD- MIUM (CD) (UG/L) (01027)	SUS- PENDEL CAD- MIUM (CD) (UG/L) (01026)	DIS- SOLVED CAD- MIUM (CD) (UG/L) (01025)	TOTAL CHRO- MIUM (CR) (UG/L) (01034)	SUS- PENDEL CHRO- MIUM (CR) (UG/L) (01031)	DIS- SOLVED CHRO- MIUM (CR) (UG/L) (01030)	TOTAL COBALT (CO) (UG/L) (01037)
OCT										
05...	--	--	--	--	--	--	--	--	--	--
NOV										
02...	--	--	--	--	--	--	--	--	--	--
DEC										
06...	4	2	2	2	0	2	10	10	0	0
MAR										
14...	9	6	3	2	1	1	20	20	0	8
APR										
19...	--	--	--	--	--	--	--	--	--	--
MAY										
17...	--	--	--	--	--	--	--	--	--	--
JUN										
14...	11	9	2	10	--	3	10	--	0	<50
AUG										
15...	--	--	--	--	--	--	--	--	--	--
SEP										
09...	4	3	1	<10	<9	1	20	20	0	<50

DATE	SUS- PENDEL COBALT (CO) (UG/L) (01036)	DIS- SOLVED COBALT (CO) (UG/L) (01035)	TOTAL COPPER (CU) (UG/L) (01042)	SUS- PENDEL COPPER (CU) (UG/L) (01041)	DIS- SOLVED COPPER (CU) (UG/L) (01040)	TOTAL LEAD (PB) (UG/L) (01051)	SUS- PENDEL LEAD (PB) (UG/L) (01050)	DIS- SOLVED LEAD (PB) (UG/L) (01049)	TOTAL MERCURY (HG) (UG/L) (71900)	SUS- PENDEL MERCURY (HG) (UG/L) (71895)
OCT										
05...	--	--	--	--	--	--	--	--	--	--
NOV										
02...	--	--	--	--	--	--	--	--	--	--
DEC										
06...	0	0	6	0	6	140	140	4	.1	.0
MAR										
14...	8	0	25	20	5	25	20	5	.0	.0
APR										
19...	--	--	--	--	--	--	--	--	--	--
MAY										
17...	--	--	--	--	--	--	--	--	--	--
JUN										
14...	--	0	20	--	10	<100	--	3	.0	--
AUG										
15...	--	--	--	--	--	--	--	--	--	--
SEP										
09...	<49	1	20	15	5	<100	<99	1	.1	.1

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WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	DIS- SOLVED MERCURY (MG) (UG/L) (71090)	TOTAL SELE- NIUM (SE) (UG/L) (01147)	SUS- PENDE SELE- NIUM (SE) (UG/L) (01146)	DIS- SOLVED SELE- NIUM (SE) (UG/L) (01145)	TOTAL ZINC (ZN) (UG/L) (01092)	SUS- PENDE ZINC (ZN) (UG/L) (01091)	DIS- SOLVED ZINC (ZN) (UG/L) (01090)	SUS- PENDE SEDI- MENT (MG/L) (80154)	SUS- PENDE SEDI- MENT CHARGE (T/DAY) (80155)
OCT 05...	--	--	--	--	--	--	--	165	17900
NOV 02...	--	--	--	--	--	--	--	667	73500
DEC 06...	.1	2	0	2	40	30	10	265	--
MAR 14...	.0	2	1	1	50	30	20	405	30300
APR 19...	--	--	--	--	--	--	--	634	65900
MAY 17...	--	--	--	--	--	--	--	567	58000
JUN 14...	.0	2	1	1	50	--	20	--	--
AUG 15...	--	--	--	--	--	--	--	906	87300
SEP 08...	.0	2	0	3	40	36	10	1010	102000

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SUS- PENDE SEDI- MENT (MG/L) (80154)	SUS- PENDE SEDI- MENT CHARGE (T/DAY) (80155)	SUS. SED. SIEVE DIAM. X FINER THAN .062 MM (70321)
OCT 05...	1100	19.8	40200	165	17900	--
NOV 02...	1400	9.0	40800	667	73500	20
MAR 14...	1330	8.0	27700	405	30300	98
APR 19...	1330	18.0	38500	634	65900	66
MAY 17...	1010	21.0	37900	567	58000	28
AUG 15...	1230	22.5	35700	906	87300	23
SEP 08...	1315	24.5	37500	1010	102000	30

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WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	OCT 5,76 1100	NOV 2,76 1400	DEC 6,76 1240	JAN 3,77 1100	FEB 15,77 1145
TOTAL CELLS/ML	25000	5000	1800	910	25000
DIVERSITY: DIVISION	1.5	0.6	1.5	1.2	1.0
..CLASS	1.5	0.6	1.5	1.2	1.0
..ORDER	1.7	0.8	2.0	1.8	1.1
..FAMILY	1.9	0.8	2.1	2.1	1.1
....GENUS	2.1	0.8	2.1	0.0	1.1

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
..CHLOROCOCCALES										
..CHARACIACEAE	--	--	49	1	--	--	--	--	--	--
..SCHROEDERIA										
..OOCYSTACEAE										
..ANKISTRODESCHUS	500	2	--	--	9	1	*	0	--	--
..DICTYOSPHAERIUM	--	--	--	--	--	--	--	--	--	--
..KIRCHNERIELLA	* 0	--	--	--	--	--	--	--	--	--
..TREUBARIA	500	2	--	--	--	--	--	--	--	--
..SCENEDESMACEAE										
..SCENEDESMUS	3500	14	200	4	56	3	45	6	--	--
..VOLVOCALES										
..CHLAMYDOMONADACEAE										
..CHLAMYDOMONAS	250	1	--	--	--	--	6	1	*	0
..PHACOTACEAE										
..PHACOTUS	--	--	--	--	19	1	--	--	--	--
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
..CENTRALES										
..COSCINODISCAEAE										
..CYCLOTELLA	2000	8	150	3	--	--	79	10	550	2
..MELOSIRA	4200	17	--	--	--	--	51	6	--	--
..STEPHANODISCUS	--	--	--	--	580	37	--	--	--	--
..PENNALES										
..FRAGILARIACEAE										
..ASTERIONELLA	--	--	--	--	310	17	330	41	8800	35
..FRAGILARIA	--	--	--	--	--	--	28	3	--	--
..NAVICULACEAE	--	--	--	--	--	--	*	0	--	--
..DIPLOEIS	--	--	--	--	--	--	*	0	--	--
..NAVICULA	* 0	--	49	1	9	1	11	1	--	--
..NITZSCHIAEAE										
..NITZSCHIA	370	1	--	--	--	--	17	2	--	--
..SURIRELLACEAE										
..SURIRELLA	--	--	--	--	--	--	*	0	--	--
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
..CHROCOCCALES										
..CHROCOCCACEAE										
..AGMENELLUM										
..ANACYSTIS	250	1	98	2	--	--	--	--	--	--
..HORMOGONALES										
..NOSTOCACEAE										
..ANABAENOPSIS	--	--	--	--	--	--	--	--	--	--
..OSCILLATORIACEAE										
..LYNGBYA	14000	53	--	--	630	35	--	--	--	--
..OSCILLATORIA			4400	88	--	--	220	27	15000	62
EUGLENOPHYTA (EUGLENIDS)										
..CRYPTOPHYCEAE										
..CRYPTOMONIDALES										
..CRYPTOCHRYSIDACEAE										
..CHROOMONAS	--	--	--	--	94	5	--	--	--	--
..CRYPTOMONODACEAE	--	--	--	--	--	--	--	--	--	--
..CRYPTOMONAS	--	--	--	--	--	--	--	--	--	--
..EUGLENOPHYCEAE										
..EUGLENALES										
..EUGLENACEAE										
..EUGLENA	--	--	--	--	--	--	--	--	--	--
..TRACHELOMONAS	* 0	--	49	1	--	--	--	--	--	--
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
..GYMNODINIALES										
..GYMNODINIACEAE										
..GYMNODINIUM	--	--	--	--	9	1	--	--	--	--

DATE TIME	MAY 17,77 1010	JUN 14,77 1200	JUL 19,77 1115	AUG 15,77 1230	SEP 9,77 1315
TOTAL CELLS/ML	4000	20000	6500	3400	15000
DIVERSITY: DIVISION	0.8	1.1	1.7	1.4	1.5
..CLASS	0.8	1.1	1.7	1.4	1.5
..ORDER	1.2	1.3	2.0	2.1	2.2
..FAMILY	3.2	2.3	2.9	2.9	2.9
....GENUS	3.6	3.6	3.3	3.7	3.5

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PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

DATE TIME	MAY 17,77 1010 CELLS /ML PER- CENT	JUN 14,77 1200 CELLS /ML PER- CENT	JUL 19,77 1115 CELLS /ML PER- CENT	AUG 15,77 1230 CELLS /ML PER- CENT	SEP 0,77 1315 CELLS /ML PER- CENT
ORGANISM					
CHLOROPHYTA (GREEN ALGAE)					
..CHLOROPHYCEAE					
..CHLOROCOCCALES					
..CHARACIACEAE					
..SCHROEDERIA	--	--	180 3	* 0	--
..COELASTRACEAE					
..COELASTRUM	--	360 2	330 5	--	--
..HYDRODICTYACEAE					
..PEDIASTRUM	--	410 2	400 6	--	1300 8
..MICRACTINIACEAE					
..GOLENKINIA	--	* 0	* 0	--	* 0
..ODCYSTACEAE					
..ANKISTRODESMUS	200 5	520 3	--	110 3	400 2
..DICTYOSPHAERIUM	--	1700 8	--	280 8	2000 12
..KIRCHNERIELLA	--	* 0	--	* 0	240 1
..OOCYSTIS	--	210 1	--	--	480 3
..SELENASTRUM	--	160 1	--	53 2	--
..TETRAEDRON	--	100 1	--	* 0	--
..TREUBARIA	--	--	150 2	--	--
..SCENEDESMACEAE					
..ACTINASTRUM	--	2800 14	--	220 7	--
..CRUCIGENIA	--	1000 5	100 2	110 3	320 2
..SCENEDESMUS	290 7	8500 32	1900 30	940 27	2100 13
..TETRASTRUM	--	930 4	--	--	320 2
..TETRASPORALES					
..PALMELLACEAE					
..SPHAEROCYSTIS	--	--	--	--	540 4
..VOLVOCALES					
..CHLAMYDOMONADACEAE					
..CHLAMYDOMONAS	--	210 1	--	240 7	--
..PHACOTACEAE					
..PHACOTUS	--	* 0	--	140 4	--
..ZYGNEMATALES					
..DESMIDIACEAE					
..FLOSTERIUM	--	--	--	--	160 1
..COSMARIDIUM	--	--	50 1	--	--
..CHLOROCOCCALES					
..ODCYSTACEAE					
..GLOEOACTINIUM	--	--	--	110 3	--
CHRYSTOPHYTA					
..BACILLARIOPHYCEAE					
..CENTRALES					
..COSCINODISCACEAE					
..CYCLOTELLA	250 6	830 4	300 5	400 12	2500 15
..MELOSIRA	29 1	100 1	400 5	26 1	--
..STEPHANODISCUS	--	--	450 7	--	240 1
..PENNALES					
..ACHNANTHACEAE					
..ACHNANTHES	58 1	210 1	--	--	--
..COCCONEIS	58 1	--	* 0	* 0	--
..CYMBELLACEAE					
..CYMBELLA	87 2	* 0	--	--	--
..EPITHEMIA	260 5	--	--	--	--
..DIATOMACEAE					
..DIATOMA	260 5	--	180 3	--	--
..FRAGILARIACEAE					
..ASTERIONELLA	--	990 5	--	--	--
..FRAGILARIA	640 15	880 4	--	130 4	--
..HARRIAEA	29 1	--	--	--	--
..SYNEDRA	410 10	--	230 3	--	--
..GOMPHONEMACEAE					
..GOMPHONEMA	200 5	--	--	--	--
..NAVICULACEAE					
..NAVICULA	490 12	* 0	75 1	26 1	--
..PINNULARIA	--	--	--	--	160 1
..NITZSCHACEAE					
..NITZSCHIA	--	* 0	--	--	--
..NITZSCHIA	520 13	410 2	* 0	130 4	240 1
..SURIARELLACEAE					
..SURIARELLA	--	* 0	--	--	--
CYANOPHYTA (BLUE-GREEN ALGAE)					
..CYANOPHYCEAE					
..CHROCOCCOCCALES					
..CHROCOCCACEAE					
..AGMENELLUM	--	--	1500 22	--	3000 18
..ANACYSTIS	--	--	--	110 3	160 1
..NORMOGONALES					
..NOSTOCACEAE					
..ANABAENOPSIS	--	520 3	--	--	--
..OSCILLATORIACEAE					
..LYNGBYA	--	--	--	--	2200 14
..OSCILLATORIA	230 6	1200 6	--	250 7	--
EUGLENOPHYTA (EUGLENIDS)					
..CRYPTOPHYCEAE					
..CRYPTOMONIDALES					
..CRYPTOCHRYSIDACEAE					
..CHROOMONAS	--	--	--	* 0	--
..CRYPTOMONODACEAE	--	--	--	53 2	--
..CRYPTOMONAS	--	--	--	--	--
..EUGLENOPHYCEAE					
..EUGLENALES					
..EUGLENACEAE					
..EUGLENA	--	--	--	26 1	--
..TRACHELOMONAS	--	--	180 3	* 0	--

08807410 WEST NISHNABOTNA RIVER AT HANCOCK, IA

LOCATION.--Lat 41°23'24", long 90°22'17", in NE1/4 sec.18, T.75 N., R.39 W., Pottawattamie County, Hydrologic Unit 18240902, on downstream end of right pier of bridge on county highway 630, 0.6 mi (1.0 km) west of Hancock school, and 3.0 mi (4.8 km) downstream from Jim Creek.

DRAINAGE AREA.--609 mi² (1,577 km²).

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,085.94 ft (330.995 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--18 years, 262 ft³/s (7.420 m³/s), 5.84 in/yr (148 mm/yr), 189,800 acre-ft/yr (234 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,400 ft³/s (748 m³/s) Sept. 13, 1972, gage height, 22.12 ft (6.742 m); minimum daily, 2.2 ft³/s (0.062 m³/s) Feb. 9, 1971.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,110 ft³/s (31.4 m³/s) Sept. 1, gage height, 4.70 ft (1.433 m), no peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 9.2 ft³/s (0.26 m³/s) July 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	48	25	19	11	100	66	29	22	28	20	878
2	46	45	23	19	11	95	66	29	18	22	22	189
3	45	45	22	17	11	90	63	29	16	20	20	228
4	54	42	21	17	11	88	73	38	16	15	18	610
5	54	38	21	16	11	86	67	50	15	14	86	411
6	50	43	20	16	10	85	59	50	14	11	273	169
7	49	44	19	16	10	85	53	161	11	11	53	106
8	48	39	16	16	11	95	52	63	11	10	38	89
9	46	49	15	16	12	111	49	50	10	9.2	46	242
10	48	48	14	16	15	119	45	39	9.7	10	38	376
11	46	40	14	16	20	160	43	38	9.7	24	29	135
12	48	38	14	15	25	217	42	33	14	30	25	91
13	45	39	14	15	30	186	46	28	19	16	22	74
14	44	40	15	15	30	119	48	28	37	13	21	60
15	42	56	16	15	25	102	46	26	33	12	22	92
16	42	54	17	14	25	94	44	26	18	30	59	48
17	39	32	18	14	34	84	42	26	16	78	39	46
18	43	29	20	14	45	77	40	25	34	169	44	45
19	48	34	21	14	50	76	43	25	24	50	21	38
20	53	44	19	14	60	73	45	38	14	30	28	32
21	50	43	18	14	100	74	46	164	14	28	46	31
22	48	37	18	14	120	74	46	115	16	203	25	29
23	48	35	10	14	130	67	45	67	18	64	24	48
24	50	37	19	14	140	61	40	44	31	169	21	258
25	49	48	20	14	150	60	34	38	31	339	22	178
26	46	48	21	14	140	60	32	31	34	95	28	94
27	46	45	23	14	120	61	32	35	25	52	28	68
28	45	40	23	13	110	79	31	31	187	39	38	57
29	46	35	21	13	---	117	28	28	53	35	27	49
30	49	28	19	12	---	97	32	24	31	28	22	44
31	50	---	18	12	---	73	---	24	---	22	452	---
TOTAL	1463	1242	581	459	1488	2935	1398	1422	801.4	1684.2	1665	4472
MEAN	47.2	41.4	18.7	14.8	53.1	94.7	46.6	45.9	26.7	53.7	53.7	149
MAX	54	56	25	18	150	217	73	164	187	339	452	610
MIN	39	28	14	12	10	60	28	24	9.7	9.2	18	29
CFSM	.08	.07	.03	.02	.09	.16	.08	.08	.04	.09	.09	.25
IN	.09	.08	.04	.03	.09	.18	.09	.09	.05	.10	.10	.27
AC-FT	2900	2460	1150	910	2960	5820	2770	2820	1590	3300	3300	8870

CAL VR 1976 TOTAL 52468.0 MEAN 143 MAX 3330 MIN 14 CFSM .24 IN 3.20 AC-FT 104100
WTR VR 1977 TOTAL 19591.6 MEAN 53.7 MAX 610 MIN 9.2 CFSM .09 IN 1.20 AC-FT 38860

08809800 WEST NISHNABOTNA RIVER AT RANDOLPH, IA

LOCATION.--Lat 40°52'23", long 95°34'48", in NE1/4 NE1/4 sec.17, T.70 N., R.41 W., Fremont County, Hydrologic Unit 10240002, on right bank 39 ft (9 m) upstream from bridge on State Highway 184, 0.3 mi (0.5 km) downstream from Bear Creek, 0.3 mi (0.5 km) west of Randolph, and 16.2 mi (26.1 km) upstream from confluence with East Nishnabotna River.

DRAINAGE AREA.--1,325 mi² (3,434 km²).

PERIOD OF RECORD.--June 1948 to current year.

REVISED RECORDS.--WSP 1440: Drainage area. WRD Iowa 1974: 1973 (M). WRD IA-76-1: 1975 (P).

GAGE.--Water-stage recorder. Datum of gage is 932.99 ft (284.375 m) above mean sea level, unadjusted. Prior to Aug. 26, 1955, nonrecording gage and June 30, 1949, to Aug. 26, 1955, supplementary water-stage recorder, operating above gage height 8.4 ft (2.56 m) at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--29 years, 833 ft³/s (15.09 m³/s), 5.45 in/yr (139 mm/yr), 386,206 acre-ft/yr (475 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,600 ft³/s (1,010 m³/s) June 21, 1957, gage height, 22.60 ft (6.888 m); maximum gage height, 24.8 ft (7.56 m) Mar. 6, 1949, from graph based on gage readings (backwater from ice); minimum daily discharge, 10 ft³/s (0.283 m³/s) Dec. 17-21, 1955.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of about 24 ft (7.3 m), discharge not determined, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,200 ft³/s (289 m³/s) Sept. 4, gage height, 18.14 ft (5.529 m) at 1930 hours, no other peak above base of 6,500 ft³/s (184 m³/s); minimum daily, 59 ft³/s (1.67 m³/s) Jan. 31 to Feb. 2, July 9, 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	136	140	120	95	59	136	192	82	99	82	75	1300
2	131	135	118	80	59	155	191	83	88	71	73	1810
3	128	130	110	76	80	219	189	393	85	87	70	766
4	133	128	110	72	80	249	221	182	83	85	89	4050
5	148	128	110	70	80	178	210	796	78	83	75	2850
6	148	130	105	70	80	170	191	240	74	64	198	933
7	126	131	100	68	80	193	173	178	73	65	290	570
8	132	130	95	68	80	189	156	1420	73	63	175	434
9	131	132	90	68	82	203	148	625	73	69	1405	370
10	131	139	95	66	86	218	139	220	72	69	397	331
11	131	134	95	66	78	290	128	172	70	81	202	800
12	129	113	85	65	74	495	122	180	77	84	110	416
13	125	110	85	64	78	430	128	145	98	70	90	344
14	128	110	88	64	80	307	135	135	102	69	80	295
15	115	120	92	64	80	238	136	128	82	63	85	257
16	115	140	95	62	84	198	133	120	86	60	887	239
17	115	182	100	60	90	182	129	118	76	79	331	439
18	120	170	110	60	100	188	131	120	73	204	150	282
19	132	170	120	60	120	175	138	118	73	240	111	229
20	138	161	110	60	150	189	130	180	72	142	100	210
21	137	152	100	60	180	180	135	162	73	103	95	208
22	138	136	90	60	250	167	128	271	77	95	130	198
23	138	138	90	60	300	184	118	255	76	152	98	1636
24	162	140	95	60	320	155	112	160	74	191	77	1430
25	165	149	100	60	218	154	102	130	88	225	75	582
26	141	152	110	60	201	154	95	115	75	315	78	915
27	135	150	115	60	174	161	91	178	71	205	109	375
28	134	140	115	60	145	189	89	198	145	118	228	310
29	135	130	105	60	---	308	81	95	230	110	108	259
30	141	125	95	60	---	274	80	105	170	98	88	289
31	143	---	90	59	---	218	---	105	---	77	3450	---
TOTAL	4157	4125	3116	2008	2320	5695	4151	7339	2684	3438	9499	22818
MEAN	134	138	101	64.8	119	214	138	237	89.5	111	305	751
MAX	165	170	120	85	320	495	221	1420	230	315	3450	4950
MIN	115	110	85	59	59	136	80	82	70	59	59	198
CFSM	.10	.10	.08	.05	.09	.18	.10	.18	.07	.08	.23	.57
IN.	.12	.12	.09	.05	.09	.19	.12	.21	.08	.10	.27	.63
AC-FT	8270	8180	8180	3950	6590	13280	8230	14550	5320	6820	18820	44580

CAL VR 1976 TOTAL 140789 MEAN 385 MAX 7800 MIN 85 CFSM .29 IN 3.95 AC-FT 279300
WTR VR 1977 TOTAL 73050 MEAN 290 MAX 4050 MIN 59 CFSM .15 IN 2.05 AC-FT 144900

NISHNABOTHA RIVER BASIN

195

05809210 EAST NISHNABOTHA RIVER NEAR ATLANTIC, IA

LOCATION.--Lat 41°29'47", long 95°04'31", in NW1/4 NW1/4 sec.35, T.76 N., R.37 W., Cass County, Hydrologic Unit 10240903, on left bank at downstream side of bridge on county highway, 1.9 mi (3.1 km) upstream from Turkey Creek, and 5.4 mi (8.7 km) southwest of junction of U.S. Highway 6 and State Highway 93 in Atlantic.

DRAINAGE AREA.--436 mi^2 (1,129 km^2).

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,105.83 ft (337.087 m) above mean sea level. Prior to Oct. 1, 1976, at site 2.8 mi (3.2 km) upstream at datum 5.00 ft (1.524 m) higher.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--17 years, 209 ft^3/s (5.919 m^3/s), 6.51 in/yr (165 mm/yr), 151,400 acre-ft/yr (187 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,700 ft^3/s (756 m^3/s) Sept. 12, 1972, gage height, 22.81 ft (6.952 m); minimum daily, 2.5 ft^3/s (0.071 m^3/s) July 10, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,230 ft^3/s (120 m^3/s) Sept. 3, gage height, 10.29 ft (3.136 m) at 2130 hours, no other peak above base of 3,000 ft^3/s (85.0 m^3/s); minimum daily 2.5 ft^3/s (0.071 m^3/s) July 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	35	19	16	12	80	50	20	14	17	14	650
2	46	31	19	16	11	90	60	29	14	19	20	399
3	46	30	19	16	11	100	67	31	14	17	12	826
4	46	31	19	16	11	114	60	35	12	16	11	1890
5	49	31	19	16	11	95	72	44	13	14	234	1130
6	46	34	10	16	11	94	60	43	11	14	528	384
7	47	34	10	15	11	90	60	40	0.5	12	65	203
8	43	33	10	15	11	85	60	43	10	9.5	33	138
9	40	37	10	16	12	100	44	29	10	3.5	44	140
10	27	35	10	15	12	100	41	26	11	2.5	61	330
11	38	31	17	16	12	140	37	24	11	19	31	130
12	38	28	17	15	13	252	38	20	13	15	14	89
13	35	28	17	16	13	148	35	20	22	15	9.5	85
14	34	25	17	16	15	105	35	20	22	11	7.5	69
15	34	25	17	14	16	83	33	20	22	9.5	8.8	83
16	33	25	17	14	16	74	31	26	19	9.5	56	44
17	33	25	17	14	17	62	30	17	17	60	50	43
18	34	26	17	14	19	63	31	17	20	151	69	44
19	40	27	17	14	22	63	40	15	16	72	50	34
20	43	27	17	13	25	58	37	17	14	30	25	26
21	29	26	16	12	20	56	37	20	16	26	14	24
22	35	23	16	13	31	50	40	17	20	30	6.5	20
23	40	22	16	13	36	51	33	17	24	51	6.5	264
24	40	22	16	13	40	40	30	19	99	190	3.5	915
25	35	22	16	13	45	46	28	15	91	444	3.5	414
26	38	22	16	13	50	44	29	14	44	74	12	225
27	34	21	16	12	60	50	28	13	31	33	45	154
28	30	20	16	12	70	71	28	13	44	24	69	120
29	33	20	16	12	---	127	26	16	22	25	71	105
30	34	19	16	12	---	85	28	14	19	19	37	98
31	35	---	16	12	---	60	---	14	---	15	690	---
TOTAL	1196	814	531	427	630	2698	1204	722	700.6	1476.5	2287.5	9054
REL. H	29.5	27.1	17.1	14.1	22.0	67.0	41.1	28.0	20.5	47.6	73.6	302
MAX	49	37	19	16	70	250	60	46	99	444	690	1090
MIN	20	18	10	11	11	44	10	13	0.5	2.5	3.5	20
CFS/MI	.08	.06	.04	.03	.05	.20	.06	.05	.05	.11	.17	.69
IN.	.10	.07	.04	.04	.06	.20	.11	.06	.06	.12	.20	.77
AC-FT	2270	1610	1050	867	1270	5010	2450	1420	1400	2930	4540	17960

CAL. YR 1976 TOTAL 80168.8 MEAN 162 MAX 2070 MIN 16 CFSM .37 IN 5.05 AC-FT 117400
WTR YR 1977 TOTAL 21790.5 MEAN 59.7 MAX 1090 MIN 2.5 CFSM .14 IN 1.66 AC-FT 43220

NISHNABOTNA RIVER BASIN

05809500 EAST NISHNABOTNA RIVER AT RED OAK, IA

LOCATION.--Lat 41°00'41", long 95°14'07", in NW1/4 SE1/4 sec.29, T.72 N., R.38 W., Montgomery County, Hydrologic Unit 10240003, on left bank on downstream side of Coolbaugh Street bridge in Red Oak, and 0.2 mi (0.3 km) upstream from Red Oak Creek.

DRAINAGE AREA.--894 mi² (2,315 km²).

PERIOD OF RECORD.--May 1918 to July 1925, May 1936 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--VSP 1240: 1921, 1922-23 (M), 1924, 1942 (M), 1944 (M), 1946. VSP 1440: Drainage area. VSP 1710: 1957.

GAGE.--Water-stage recorder. Datum of gage is 1,005.45 ft (306.481 m) above mean sea level, unadjusted. Prior to July 8, 1925, nonrecording gage at present site at datum 4.60 ft (1.402 m) higher. May 29, 1926, to Nov. 13, 1952, nonrecording gage with supplementary water-stage recorder in operation above 3.2 ft (0.975 m) gage height July 30, 1939, to Nov. 13, 1952, and Nov. 14, 1952, to June 13, 1956, water-stage recorder, all at site 0.8 mi (0.8 km) upstream at datum 5.00 ft (1.524 m) higher. June 14, 1956, to Sept. 30, 1959, at present site at datum 5.00 ft (1.524 m) higher.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--47 years (water years 1918-24, 1936-77), 359 ft³/s (10.45 m³/s), 5.61 in/yr (142 mm/yr), 267,300 acre-ft/yr (330 km³/yr); median of yearly mean discharges, 350 ft³/s (9.91 m³/s), 5.3 in/yr (135 mm/yr), 254,000 acre-ft/yr (310 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,000 ft³/s (1,080 m³/s) Sept. 13, 1972, gage height, 27.43 ft (8.361 m); maximum gage height, 28.23 ft (8.605 m) June 13, 1947, present datum; minimum daily discharge, 8 ft³/s (0.17 m³/s) Aug. 18, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s (127 m³/s) and maximum ("):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Aug. 28	0130	8,820 193	14.35 4.374	Sept. 2	0800	5,660 160	13.33 4.063
Aug. 31	0900	5,900 167	13.65 4.130				

Minimum daily discharge, 27 ft³/s (0.76 m³/s) Jan. 18 to Feb. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74	94	54	45	27	80	167	59	52	40	41	1840
2	72	87	54	40	27	85	164	59	48	36	39	2020
3	86	82	54	38	28	133	174	71	44	33	40	1100
4	101	78	54	36	30	228	209	75	44	31	38	2140
5	113	74	62	35	30	189	211	139	42	31	37	2200
6	104	75	60	34	29	119	179	119	41	30	324	986
7	89	75	56	33	28	114	153	105	40	30	523	544
8	80	74	54	32	30	126	134	174	39	29	191	297
9	83	75	54	31	33	162	113	137	38	28	181	337
10	74	79	54	30	37	169	101	84	35	28	113	349
11	77	75	54	30	42	202	93	73	32	50	109	400
12	74	50	54	30	50	396	87	69	33	58	85	290
13	75	60	55	30	55	336	86	66	39	49	63	252
14	73	55	55	30	60	244	87	62	54	38	55	229
15	68	78	57	30	60	194	91	61	51	32	52	205
16	67	90	58	29	55	173	95	61	44	30	195	186
17	67	85	50	28	60	133	89	69	38	40	108	603
18	72	93	55	27	65	119	86	62	36	92	92	244
19	75	93	80	27	75	121	91	61	31	232	97	205
20	83	90	70	27	90	127	99	69	28	118	78	183
21	90	88	50	27	110	114	107	71	29	74	73	171
22	88	70	56	27	140	106	101	69	35	57	63	145
23	91	76	56	27	170	100	95	68	35	63	50	1150
24	114	75	55	27	210	91	86	66	34	88	48	1580
25	106	75	57	27	212	85	82	64	117	248	46	1220
26	90	74	50	27	189	83	75	59	121	415	44	542
27	89	70	54	27	122	85	73	55	61	135	338	382
28	87	70	54	27	101	147	73	51	69	75	1530	311
29	86	65	50	27	---	322	69	51	79	60	410	274
30	87	64	55	27	---	301	68	51	47	54	208	335
31	92	---	50	27	---	201	---	52	---	46	2760	---
TOTAL	2527	2302	1843	939	2145	5086	3337	2351	1434	2366	8418	21510
MEAN	84.7	78.7	59.5	30.3	75.6	164	111	75.8	47.8	76.3	272	720
MAX	114	94	80	45	212	398	211	174	121	415	2760	2820
MIN	67	50	50	27	27	80	69	51	28	29	37	145
CFSH	.10	.09	.07	.03	.09	.18	.12	.09	.05	.09	.30	.91
IN.	.11	.10	.08	.04	.09	.21	.14	.10	.05	.10	.38	.90
AC-FT	5210	4870	3660	1850	4250	10090	5620	4660	2840	4690	16700	42860

CAL YR 1976	TOTAL	121769	MEAN 332	MAX 10000	MIN 50	CFSH .37	IN 5.07	AC-FT 241600
WTR YR 1977	TOTAL	54458	MEAN 149	MAX 2820	MIN 27	CFSH .17	IN 2.27	AC-FT 108000

NISHNABOTNA RIVER BASIN

197

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA

LOCATION.--Lat 40°37'57", long 95°37'32", in SW1/4 SE1/4 sec.11, T.67 N., R.42 W., Fremont County, Hydrologic Unit 10240004, on left bank 1.8 mi (2.8 km) downstream from confluence of East Nishnabotna and West Nishnabotna Rivers and 2 mi (3.2 km) northeast of Hamburg, and at mile 13.2 (21.2 km).

DRAINAGE AREA.--2,806 mi² (7,268 km²).

PERIOD OF RECORD.--March 1922 to September 1923, October 1928 to current year. Monthly discharge only for some periods published in WSP 1310.

REVISED RECORDS.--WSP 1240: 1923, 1929-37, 1938-40 (M), 1943 (M). WSP 1440: Drainage area. WRD Iowa, 1974: 1973.

GAGE.--Water-stage recorder. Datum of gage is 894.17 ft (272.543 m) above mean sea level. See WSP 1730 for history of changes prior to Nov. 16, 1950.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--50 years, 1,008 ft³/s (28.56 m³/s), 4.88 in/yr (124 mm/yr), 730,300 acre-ft/yr (900 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,500 ft³/s (1,570 m³/s) June 24, 1947, gage height, 26.03 ft (7.934 m), present site and datum, from floodmark; maximum gage height, 27.42 ft (8.358 m) Sept. 15, 1972; minimum daily discharge, 4.5 ft³/s (0.13 m³/s) Aug. 30, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 9,000 ft³/s (255 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Aug. 31	2100	12,000 343	23.16 7.059	Sept. 4	2300	*12,200 346	*23.24 7.084

Minimum daily discharge, 94 ft³/s (2.66 m³/s) July 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	229	268	180	210	110	321	466	197	170	195	133	7540
2	224	259	180	210	118	337	441	197	162	141	119	4790
3	216	240	180	220	120	412	417	345	154	126	110	5040
4	234	237	190	220	130	491	539	362	152	114	111	6350
5	265	234	190	200	130	517	553	653	146	108	122	8110
6	262	237	190	190	135	445	490	546	139	101	162	3950
7	243	240	190	180	140	403	420	398	131	105	293	2370
8	227	245	180	150	140	412	364	574	128	103	678	1700
9	219	243	180	130	145	433	335	1420	122	96	3240	1350
10	214	242	180	120	160	475	309	465	117	94	1720	1150
11	214	251	180	115	170	508	280	335	113	126	565	1210
12	214	204	190	110	180	532	257	275	166	166	395	1390
13	209	145	200	105	200	970	254	246	210	143	263	1230
14	209	170	210	100	220	773	259	233	162	119	213	970
15	216	190	220	96	220	580	274	220	188	114	199	858
16	194	245	230	95	210	500	268	206	166	116	1130	790
17	192	286	250	95	220	428	265	200	150	101	982	1210
18	201	292	240	97	240	384	262	204	139	152	398	1440
19	219	295	220	100	270	347	274	200	122	308	278	514
20	248	283	200	105	300	358	274	263	114	332	244	702
21	248	268	190	105	320	365	308	285	158	269	229	650
22	257	240	210	105	335	341	305	313	222	211	209	598
23	254	234	220	110	400	314	275	389	164	178	220	999
24	257	245	220	115	500	298	255	263	143	229	160	3860
25	311	255	220	120	592	292	233	210	141	272	138	2180
26	280	262	210	125	550	299	220	199	184	350	143	1650
27	257	160	200	120	470	289	211	211	206	602	239	1130
28	254	180	200	115	372	301	208	275	182	365	5590	922
29	254	200	200	110	---	529	198	218	308	296	2630	818
30	257	190	200	110	---	760	192	182	371	213	970	766
31	255	---	200	110	---	613	---	178	---	162	8490	---
TOTAL	7343	7045	6250	4093	7094	14401	9407	10270	5147	6008	31277	55537
MEAN	237	235	202	132	253	465	314	331	172	194	1009	2218
MAX	311	295	250	220	592	970	553	1420	371	602	5490	9110
MIN	192	145	180	95	110	289	192	178	113	94	110	598
CFSM	.08	.08	.07	.05	.09	.17	.11	.12	.06	.07	.36	.79
IN.	.10	.09	.08	---	.09	.19	.12	.14	.07	.08	.41	.88
AC-FT	14560	13970	12400	8120	14070	28560	18660	20370	10210	11920	62040	132000

CAL YR 1976	TOTAL	301363	MEAN 823	MAX	13100	MIN 145	CFSM .29	IN 4.00	AC-FT	597800
WTR YR 1977	TOTAL	174872	MEAN 479	MAX	8490	MIN 94	CFSM .17	IN 2.32	AC-FT	346900

TARKIO RIVER BASIN

08811840 TARKIO RIVER AT STANTON, IA

LOCATION.--Lat 40°58'52", long 95°08'32", in NW1/4 SW1/4 sec.4, T.71 N., R.37 W., Montgomery County, Hydrologic Unit 10240008, on right bank 10 ft (3 m) downstream from bridge on county highway H42, 0.1 mi (0.2 km) downstream from Little Tarkio Creek, and 0.5 mi (0.8 km) west of Stanton.

DRAINAGE AREA.--49.3 mi² (127.7 km²).

PERIOD OF RECORD.--October 1957 to current year. Annual maximum, water years 1952-57.

REVISED RECORDS.--WSP 1919: 1960 (M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,104.87 ft (336.703 m) above mean sea level.

REMARKS.--Records good except those below 2.0 ft³/s (0.057 m³/s), which are fair, and those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--20 years, 25.7 ft³/s (0.728 m³/s), 7.08 in/yr (180 mm/yr), 18,620 acre-ft/yr (23.0 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,500 ft³/s (637 m³/s) June 9, 1967, gage height, 28.55 ft (8.705 m), from rating curve extended above 1,500 ft³/s (42.5 m³/s) on basis of slope-area measurement of peak flow; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s (42.5 m³/s) and maximum ("):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Aug. 27	2345	4,240 120	16.34 4.980	Sept. 2	0800	4,180 118	16.26 4.956
Aug. 31	0715	*7,020 199	*18.47 5.630	Sept. 17	0845	2,670 75.5	14.48 4.407

No flow Nov. 28 to Dec. 21, Dec. 30 to Feb. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.22	.96	.00	.00	.00	.85	2.3	.95	.45	.24	.02	192
2	.15	.78	.00	.00	.00	1.7	5.4	2.0	.18	.10	.02	1120
3	.16	.42	.00	.00	.00	8.3	5.3	2.6	.10	.07	.01	209
4	2.1	.42	.00	.00	.00	2.0	19	2.2	.09	.04	.01	310
5	2.0	.51	.00	.00	.00	.85	11	14	.08	.03	.01	145
6	1.1	.80	.00	.00	.00	1.4	7.2	2.6	.07	.03	.01	95
7	.61	1.2	.00	.00	.00	1.7	5.1	2.1	.06	.02	.01	70
8	.43	.89	.00	.00	.00	2.3	3.6	6.6	.05	.02	.01	62
9	.53	.85	.00	.00	.00	2.3	2.8	4.2	.04	.01	.15	83
10	.62	.62	.00	.00	.00	2.7	2.4	1.9	.03	.01	4.3	49
11	.62	.85	.00	.00	2.0	23	1.7	1.5	.02	.03	1.6	45
12	.62	.42	.00	.00	3.2	18	1.4	1.2	.02	.60	.11	59
13	.64	.10	.00	.00	3.7	5.4	1.5	1.4	.02	.07	.09	59
14	.53	.10	.00	.00	5.4	3.2	1.5	1.4	.04	.05	.05	44
15	.22	.82	.00	.00	2.0	2.0	1.2	1.1	.33	.04	.05	40
16	.17	.85	.00	.00	.62	1.4	1.4	.85	.11	.03	21	37
17	.15	.85	.00	.00	1.7	1.4	1.3	1.1	.05	.02	7.0	670
18	.59	1.7	.00	.00	2.7	1.4	1.7	.85	.04	.02	1.3	103
19	.62	1.4	.00	.00	3.7	1.4	2.3	1.4	.03	.01	.07	76
20	.61	1.4	.00	.00	3.7	2.0	5.1	3.2	.04	.01	11	64
21	.40	.62	.00	.00	3.7	2.0	5.1	2.0	.04	.04	6.5	58
22	.41	.42	.01	.00	7.5	1.4	3.2	1.7	.05	.01	2.3	51
23	1.0	.42	.03	.00	16	1.1	2.5	1.1	.22	.01	.38	404
24	2.3	.62	.03	.00	4.8	.85	1.8	.85	.22	.05	.60	153
25	1.5	1.1	.03	.00	2.3	.85	1.9	.85	.42	.23	.50	82
26	1.1	.85	.03	.00	1.4	.85	2.0	.79	.23	.10	.40	55
27	.85	.62	.05	.00	1.1	1.1	1.4	.58	.07	.05	428	57
28	.92	.00	.05	.00	1.1	13	1.1	.62	2.1	.03	1170	52
29	.98	.00	.02	.00	---	18	1.1	.95	1.4	.03	81	50
30	1.0	.00	.00	.00	---	4.8	.75	.87	.88	.02	29	82
31	1.1	---	.00	.00	---	2.3	---	.85	---	.02	1870	---
TOTAL	24.21	20.39	.26	.00	56.52	127.55	105.05	54.32	7.45	2.04	3520.35	4569
MEAN	.79	.69	.008	.000	2.38	4.11	3.50	2.07	.25	.066	117	152
MAX	2.3	1.7	.05	.00	16	23	19	14	2.1	.60	1870	1120
MIN	.15	.00	.00	.00	.00	.85	.78	.58	.02	.01	.01	37
CFSM	.02	.01	.000	.000	.05	.08	.07	.04	.005	.001	2.37	2.08
IN.	.02	.02	.00	.00	.05	.10	.08	.05	.01	.00	2.73	3.45
AC-FT	48	40	.5	.00	132	253	208	128	15	4.0	7180	9060

CAL YR 1976 TOTAL 8950.43 MEAN 24.5 MAX 2310 MIN .00 CFSM .50 IN 6.76 AC-FT 17770
WTR YR 1977 TOTAL 8607.26 MEAN 23.6 MAX 1870 MIN .00 CFSM .48 IN 6.49 AC-FT 17070

MISSOURI RIVER MAIN STEM

199

06913800 MISSOURI RIVER AT RULO, MO

LOCATION.--Lat 40°03'14", long 95°25'12", in NW1/4 NW1/4 sec.17, T.1 N., R.18 E., Richardson County, Hydrologic Unit 10240005, on downstream end of middle pier of bridge on U.S. Highway 159 at Rulo, 3.2 mi (5.1 km) upstream from Remaha River, and at mile 498.0 (801.3 km).

DRAINAGE AREA (REVISED).--414,908 mi² (1,074,600 km²), approximately. The 3,959 mi² (10,254 km²) in Great Divide basin are not included.

PERIOD OF RECORD.--October 1949 to current year in reports of Geological Survey. Gage-height record collected at site 80 ft (24 m) upstream January 1886 to December 1899 published in reports of Missouri River Commission September 1929 to September 1950 in files of Kansas City office of Corps of Engineers.

GAGE.--Water-stage recorder. Datum of gage is 837.23 ft (255.188 m) above mean sea level. Prior to Sept. 13, 1950, nonrecording gage at site 80 ft (24 m) upstream at same datum.

REMARKS.--Records good except those for winter period, which are poor. Flow regulated by upstream main-stem reservoirs. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--28 years, 39,020 ft³/s (1,105 m³/s), 28,270,000 acre-ft/yr (34,900 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 388,000 ft³/s (10,100 m³/s) Apr. 22, 1952, gage height, 25.60 ft (7.803 m); minimum daily, 4,420 ft³/s (125 m³/s) Jan. 13, 1957; minimum gage height, 0.65 ft (0.198 m) Jan. 7, 1971, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1881 reached a stage of 22.9 ft (6.98 m), from floodmark, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 83,100 ft³/s (2,350 m³/s) Sept. 5, gage height, 16.87 ft (5.142 m); maximum gage height, 17.25 ft (5.258 m) Jan. 28, backwater from ice; minimum daily discharge, 14,000 ft³/s (396 m³/s) Feb. 1; minimum gage height, 5.36 ft (1.634 m) Jan. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42000	40200	37000	24000	14000	26100	40700	38500	42300	37400	37200	69700
2	41700	40400	36500	24000	15000	25900	38900	38300	41400	36500	37400	57700
3	41600	40600	38400	23800	16000	25800	41400	39000	43000	36000	37900	63700
4	42500	40800	40200	23600	18000	25400	43100	38900	40100	35800	38200	76500
5	42700	41800	39700	23000	19000	24600	42800	40200	39100	35900	38100	77700
6	42200	41200	38100	24000	19500	24300	41500	41200	38400	35400	40300	62500
7	41600	40700	33500	24000	20000	24800	39100	40500	37000	35200	39500	49300
8	41000	39600	30000	23500	20000	23300	38800	39500	36300	35300	38200	43200
9	39700	40000	26900	23000	21000	24000	38400	43400	36000	36400	42600	41000
10	39400	40500	26300	22500	21000	24300	37800	39300	36300	36600	57000	39200
11	38800	40500	26200	22500	21000	25400	38400	39700	36200	37500	49500	38300
12	37800	41200	25300	22000	22000	27700	38000	38300	36600	36600	43900	47900
13	37700	42000	25100	22000	23000	26000	38300	38200	38400	37300	38300	61900
14	39100	41700	26400	22000	24000	29100	39200	37900	38200	37100	38200	46400
15	40500	39500	26000	22000	26000	31100	40400	38000	38000	36300	38900	41500
16	40400	39400	25900	22000	27000	29900	40200	37700	37600	37700	47600	40700
17	40400	40200	26300	22500	27900	29000	39100	37900	36800	37600	49300	39200
18	41100	40100	26400	21000	27800	29300	42400	37400	38000	39300	44400	41200
19	41100	40300	26000	20000	27500	29700	41100	39500	39000	38100	41000	40200
20	41200	40600	25800	19000	27000	29000	40500	43700	40500	36400	38300	39200
21	41700	41400	25900	18500	28000	30100	41200	40800	38800	35900	38400	38800
22	41200	41700	25300	20500	29000	35000	41000	41800	37400	41000	40700	38100
23	41000	40700	24400	21000	27300	40500	41500	45200	36800	43800	41900	38200
24	40700	40600	25000	20000	29100	39600	44000	49500	37600	38200	39500	46200
25	41200	39700	26600	20000	29300	38600	41000	46300	44700	41400	38600	42800
26	41400	40100	25800	19500	29300	41300	40300	42100	41400	41400	38300	40600
27	40900	40600	26100	18500	28300	41900	40000	40600	36200	39400	38400	39700
28	40800	40500	26100	17500	27000	40800	40000	46500	36800	37700	49500	38900
29	41200	39200	25600	16500	---	43100	39400	56600	37500	41000	47300	38400
30	40500	37900	24800	15500	---	42800	39100	56200	37500	37600	41500	38100
31	40000	---	24800	15000	---	43100	---	46100	---	36900	48600	---
TOTAL	1263200	1213400	883500	652900	664000	973500	1207600	1298800	1153900	1168800	1298600	1422800
MEAN	40750	40450	28500	21050	23710	31400	40250	41900	38450	37700	41890	47430
MAX	42700	42000	40200	24000	29300	43100	44000	56600	44700	43800	57000	77700
MIN	37700	37900	24400	15000	14000	23300	37800	37400	36000	36200	37200	38100
AC-FT	2506000	2407000	1752000	1295000	1317000	1931000	2395000	2576000	2289000	2318000	2576000	2822000

CAL YR 1976 TOTAL 14736700 MEAN 40260 MAX 69100 MIN 15000 AC-FT 29230000
 WTR YR 1977 TOTAL 13201000 MEAN 36170 MAX 77700 MIN 14000 AC-FT 26180000

NODAWAY RIVER BASIN

06817000 NODAWAY RIVER AT CLARINDA, IA

LOCATION.--Lat 40°44'19", long 95°00'47", in SW1/4 NE1/4 sec.32, T.69 N., R.36 W., Page County, Hydrologic Unit 10240009, near left abutment on downstream side of bridge on State Highway 2 (city route), 0.5 mi (0.8 km) downstream from North Branch, 1.2 mi (1.9 km) east of city square of Clarinda, and 7.3 mi (12.1 km) upstream from East Nodaway River.

DRAINAGE AREA.--782 mi² (1,973 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1918 to July 1925, May 1936 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 1240: 1918-20 (M), 1921, 1922-25 (M), 1936-38, 1942, 1943-45 (M), 1948. WSP 1440: Drainage area. WSP 1710: 1958, 1959 (P).

GAGE.--Water-stage recorder. Datum of gage is 950.36 ft (292.718 m) above mean sea level. Prior to July 5, 1925, and May 28, 1936, to Mar. 25, 1957, nonrecording gage at same site and datum.

REMARKS.--Records good prior to Aug. 28 and fair thereafter, except those for winter period, which are poor. Clarinda municipal water supply is taken from Nodaway River, 500 ft (152 m) above station. Average daily pumpage was 1.05 ft³/s (0.030 m³/s).

COOPERATION.--Average pumpage furnished by Clarinda water works.

AVERAGE DISCHARGE.--47 years (1918-24, 1936-77), 321 ft³/s (9.091 m³/s), 5.72 in/yr (145 mm/yr), 232,500 acre-ft/yr (287 hm³/yr); median of yearly mean discharges, 260 ft³/s (7.36 m³/s), 4.6 in/yr (117 mm/yr), 188,000 acre-ft/yr (232 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,100 ft³/s (881 m³/s) June 13, 1947, gage height, 25.3 ft (7.71 m), from floodmark, from rating curve extended above 15,000 ft³/s (425 m³/s) on basis of an overflow profile and extended channel ratings; minimum daily, 1 ft³/s (0.028 m³/s) Sept. 5, 9, 12, 14, 1918, Dec. 9, 27-31, 1923.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1903 reached a stage of 25.4 ft (7.74 m), from floodmarks, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft³/s (142 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)
Aug. 28	0330	15,000 425	14.26 4.345	Sept. 4	1845	7,120 202	9.80 2.987
Aug. 31	1700	24,800 702	18.27 5.569	Sept. 17	1030	6,560 186	9.40 2.865
Sept. 2	1900	*27,600 782	*19.28 5.877	Sept. 24	0045	8,200 232	10.53 3.210

Minimum daily discharge, 12 ft³/s (0.34 m³/s) July 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	42	17	22	16	75	130	51	29	20	14	5220
2	39	40	17	21	16	80	127	51	26	17	15	18200
3	36	39	18	20	16	123	173	62	26	20	13	10500
4	53	37	19	19	17	173	230	58	26	16	14	5000
5	52	38	20	19	17	132	341	73	25	15	22	3280
6	46	40	19	19	17	92	252	176	21	16	28	1130
7	46	37	17	18	17	82	187	105	20	20	23	676
8	42	37	16	18	20	86	154	86	21	15	26	495
9	40	42	15	17	21	86	127	80	20	17	1360	438
10	40	40	15	17	22	101	116	60	21	17	253	370
11	39	36	15	17	30	142	103	53	22	33	103	282
12	41	20	15	17	40	427	92	45	21	29	66	364
13	40	28	16	17	40	341	84	40	26	21	42	549
14	39	45	17	17	38	176	84	41	30	19	41	370
15	36	54	18	17	35	120	84	41	26	17	41	272
16	35	54	19	16	38	98	82	40	23	18	124	229
17	34	49	20	15	45	86	78	43	22	19	137	2610
18	36	43	21	15	60	75	77	53	23	19	60	1040
19	37	43	22	15	80	71	80	46	20	14	47	605
20	38	42	23	15	90	73	86	57	18	12	501	850
21	42	41	24	15	100	71	90	46	19	19	161	517
22	40	33	22	15	130	71	103	45	28	20	81	492
23	44	38	23	15	150	67	84	62	25	18	56	2340
24	47	42	25	15	170	64	67	54	24	18	38	4690
25	46	43	27	15	200	62	60	40	22	36	39	1360
26	45	30	35	15	140	58	58	32	20	20	34	726
27	40	28	40	16	100	62	55	32	17	19	167	599
28	41	20	35	16	80	90	51	37	77	18	8440	468
29	43	17	30	16	---	454	50	36	40	18	1850	423
30	44	17	25	16	---	386	50	34	29	16	435	453
31	45	---	23	16	---	179	---	37	---	15	13000	---
TOTAL	1286	1118	667	521	1745	4203	3355	1716	767	595	26942	64548
MEAN	41.5	37.2	21.5	16.8	62.3	136	112	55.4	25.6	19.2	869	2152
MAX	53	54	40	22	200	454	341	176	77	36	13000	16200
MIN	34	17	15	15	16	58	50	32	17	12	13	229
CFSM	.05	.05	.03	.02	.08	.18	.15	.07	.03	.03	1.14	2.82
IN.	.06	.05	.03	.03	.09	.21	.16	.08	.04	.03	1.32	3.15
AC-FT	2550	2210	1320	1030	3460	8340	6650	3400	1520	1180	53440	128000
CAL YR 1976 TOTAL	125197		MEAN 342	MAX 19500	MIN 15	CFSM .45	IN 6.11	AC-FT 248300				
WTR YR 1977 TOTAL	107460		MEAN 294	MAX 18200	MIN 12	CFSM .39	IN 5.25	AC-FT 213100				

06817000 NODAWAY RIVER AT CLARINDA, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1976 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1976 to current year.

WATER TEMPERATURE: October 1976 to current year.

SEDIMENT RECORDS: October 1976 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis. Suspended-sediment samples at normal flows and winter period are collected below dam 300 ft (91 m) upstream from gage. Samples at higher stages are collected from bridge at gage. No daily temperature record for several days, Dec-Feb, Apr. to Sept.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum observed, 470 micromhos Jan. 18, 1976; minimum, 130 micromhos June 18, 1976.

TEMPERATURE: Maximum observed, 27.5°C May 24, 1977; minimum, 0.0°C several days most years.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 15,700 mg/L Sept. 2, 1977; minimum daily mean, 5 mg/L Dec. 14, 1977.

SEDIMENT LOADS: Maximum daily, 991,000 tons (899,000 tonnes) Sept. 2, 1977; minimum daily, 0.23 ton (0.21 tonne) Dec. 14, 1977.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum observed, 440 micromhos Dec. 21; minimum, 140 micromhos Sept. 3.

TEMPERATURE: Maximum observed, 27.5°C May 24; minimum, 0.0°C several days.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 15,700 mg/L Sept. 2; minimum daily mean, 5 mg/L Dec. 14.

SEDIMENT LOADS: Maximum daily, 991,000 tons (899,000 tonnes) Sept. 2; minimum daily, 0.23 ton (0.21 tonne) Dec. 14.

WATER QUALITY DATA, OCTOBER 1976 TO SEPTEMBER 1977

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	320	370	390	320	320	360	---	380	380	380	370	160
2	320	360	410	320	380	340	380	380	390	380	---	160
3	320	370	335	320	290	340	400	370	400	---	---	140
4	290	370	340	300	310	320	380	380	390	380	270	200
5	340	360	410	320	290	320	370	390	390	380	340	---
6	340	---	360	310	340	340	360	320	390	---	320	310
7	340	---	400	320	380	340	380	---	390	390	330	350
8	340	---	420	330	380	360	400	340	390	370	350	380
9	---	---	300	340	320	360	---	350	390	370	250	390
10	---	---	325	330	---	350	---	390	390	370	210	390
11	300	---	---	320	340	---	380	400	380	370	310	---
12	310	350	---	320	390	340	400	400	380	320	350	400
13	320	---	300	370	420	320	400	400	320	340	370	---
14	330	---	435	320	320	360	400	380	---	340	390	380
15	---	---	380	320	320	380	400	380	340	350	400	400
16	---	340	420	320	---	400	380	390	---	370	360	420
17	---	---	420	310	320	420	380	390	360	370	240	220
18	380	390	---	400	---	---	380	380	360	380	310	230
19	400	390	380	320	380	420	---	350	370	340	---	330
20	390	---	---	320	300	410	380	350	370	365	---	380
21	385	---	---	---	---	---	---	---	---	---	---	---
22	350	380	440	320	---	410	380	380	340	370	---	400
23	---	380	370	310	420	415	400	360	330	360	260	390
24	---	380	295	350	320	420	---	---	365	360	340	390
25	380	390	320	290	320	410	---	355	270	360	340	210
26	---	---	300	320	280	420	400	360	370	340	400	270
27	380	---	300	330	280	---	320	380	380	420	410	380
28	370	---	---	310	290	---	390	390	380	430	410	380
29	380	---	290	310	320	---	---	380	280	260	160	390
30	---	430	325	320	---	360	390	370	340	360	180	400
31	---	---	340	340	---	340	---	390	370	350	---	400
								380	---	---	150	---

NODAWAY RIVER BASIN

08817000 NODAWAY RIVER AT CLARINDA, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	9.0	---	---	---	---	---	---	---	---	---	22.0
2	18.5	---	---	---	---	---	---	---	---	---	---	---
3	18.5	8.0	---	---	---	---	10.0	---	---	---	---	---
4	---	3.5	---	---	---	---	---	---	---	---	---	---
5	---	2.0	---	---	---	---	---	---	---	---	---	---
6	18.5	---	---	---	---	---	---	---	---	---	---	---
7	12.5	---	---	---	---	---	---	---	---	---	---	---
8	14.5	---	---	---	---	---	---	---	---	---	23.0	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	13.5	---	---	---	---	---	---	---	---	---	---	---
12	18.5	2.0	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	18.5	---	---	---	---	5.5	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	0.0	---	---	8.0	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	20.0	---	---
19	4.0	6.5	---	---	---	---	18.0	---	---	---	---	---
20	10.0	---	---	---	---	---	---	---	---	---	---	20.5
21	5.5	---	---	---	---	---	---	---	21.5	---	---	---
22	10.0	---	---	---	0.5	7.0	---	---	---	---	21.5	---
23	---	2.0	---	---	---	---	---	27.5	---	---	---	---
24	---	---	---	---	---	11.0	---	---	---	---	---	---
25	9.5	---	---	---	---	12.0	---	---	---	---	---	---
26	6.5	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	6.5	---	---	---	---	9.0	---	---	---	---	21.0	---
29	---	---	---	---	---	8.5	---	---	---	---	---	---
30	---	0.0	---	---	---	---	---	---	---	---	---	---
31	---	---	---	0.0	---	---	---	---	---	---	---	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)				
	LOADS (T/DAY)		LOADS (T/DAY)		LOADS (T/DAY)		LOADS (T/DAY)		LOADS (T/DAY)		LOADS (T/DAY)		LOADS (T/DAY)				
OCTOBER			NOVEMBER			DECEMBER			JANUARY			FEBRUARY			MARCH		
1	22	2.4	20	2.3	56	2.6	104	6.2	30	1.3	15	3.0	34	7.3	95	32	129
2	23	2.4	18	1.9	34	1.6	94	5.3	34	1.5	34	7.3	33	1.4	95	32	129
3	16	1.6	9	0.95	22	1.1	32	1.7	33	1.4	95	32	39	1.8	277	129	90
4	44	9.3	14	1.4	14	0.72	32	1.6	33	1.5	252	90	33	1.5	252	90	90
5	23	3.2	23	2.4	9	0.49	47	2.4	47	2.4	252	90	33	1.5	252	90	90
6	11	1.4	28	3.0	10	0.49	34	1.7	40	1.8	155	39	40	1.8	155	39	39
7	13	1.6	23	2.3	10	0.46	22	1.1	38	1.7	110	24	38	1.7	110	24	24
8	10	1.1	27	2.7	10	0.43	22	1.1	38	2.1	77	18	38	2.1	77	18	18
9	9	0.97	32	3.6	19	0.77	30	1.4	34	1.9	60	14	34	1.9	60	14	14
10	15	1.6	29	3.1	17	0.69	32	1.5	45	2.7	64	17	45	2.7	64	17	17
11	16	1.7	23	2.2	18	0.73	45	2.1	45	3.6	230	88	45	3.6	230	88	88
12	16	1.8	17	0.92	18	0.73	20	0.92	19	2.1	2270	2990	19	2.1	2270	2990	2990
13	14	1.5	13	0.98	17	0.73	30	1.4	31	3.3	2250	2230	31	3.3	2250	2230	2230
14	26	2.7	11	1.3	5	0.23	30	1.4	36	3.7	690	328	36	3.7	690	328	328
15	28	2.7	11	1.6	6	0.29	18	0.83	30	2.8	249	80	30	2.8	249	80	80
16	24	2.3	10	1.5	17	0.87	27	1.2	27	2.8	135	36	27	2.8	135	36	36
17	19	1.7	17	2.2	20	1.1	32	1.3	23	2.8	132	31	23	2.8	132	31	31
18	11	1.1	22	2.6	16	0.91	25	1.0	24	3.9	114	23	24	3.9	114	23	23
19	7	0.70	21	2.4	14	0.83	12	0.49	30	6.5	80	15	30	6.5	80	15	15
20	8	0.82	22	2.5	55	3.4	14	0.57	24	5.8	58	11	24	5.8	58	11	11
21	13	1.5	23	2.5	17	1.1	15	0.61	14	3.8	55	11	14	3.8	55	11	11
22	12	1.3	23	2.0	35	2.1	18	0.73	9	3.2	55	11	9	3.2	55	11	11
23	15	1.8	16	1.6	59	3.7	25	1.0	60	20	40	7.2	60	20	40	7.2	7.2
24	15	1.9	9	1.0	40	2.7	17	0.69	145	67	47	8.1	145	67	47	8.1	8.1
25	12	1.5	9	1.0	38	2.8	30	1.2	151	82	67	11	151	82	67	11	11
26	12	1.5	10	0.81	30	2.8	37	1.5	106	40	66	10	106	40	66	10	10
27	10	1.1	22	1.7	25	2.7	14	0.60	63	17	62	10	63	17	62	10	10
28	31	3.4	50	2.7	24	2.3	9	0.39	47	10	98	24	47	10	98	24	24
29	14	1.6	48	2.2	27	2.2	35	1.8	---	---	3400	8260	---	---	3400	8260	8260
30	14	1.7	65	3.0	28	1.9	22	0.95	---	---	4280	4980	---	---	4280	4980	4980
31	15	1.8	---	---	62	3.9	21	0.91	---	---	1020	493	---	---	1020	493	493
TOTAL	---	58.69	---	60.36	---	47.37	---	45.29	---	298.0	---	17030.6	---	---	---	---	---

WODAWAY RIVER BASIN

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05817000 WODAWAY RIVER AT CLARINDA, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DAY	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	540	190	47	6.5	73	5.7	50	2.7	90	3.4	5660	127000
2	287	98	37	5.1	65	4.6	102	4.7	55	2.2	15700	991000
3	418	195	50	8.4	103	7.2	97	5.2	56	2.0	6960	228000
4	443	278	95	15	95	6.7	56	2.4	46	1.7	1970	26600
5	1070	985	107	21	68	4.6	77	3.1	50	3.0	3020	26700
6	650	442	522	248	137	7.8	63	2.7	49	2.7	1560	4760
7	360	182	200	57	98	5.3	70	3.8	45	2.8	680	1240
8	264	110	170	39	116	6.6	79	4.1	79	7.7	470	628
9	239	82	218	47	126	6.8	144	6.6	1850	10800	495	585
10	220	69	139	23	131	7.4	265	12	560	477	320	320
11	198	55	80	11	116	6.9	136	12	112	31	255	194
12	133	33	119	14	119	6.7	92	7.2	67	12	500	491
13	93	21	131	14	107	7.5	70	4.0	42	4.8	548	912
14	75	17	105	12	114	9.2	63	3.2	40	4.4	350	350
15	63	14	112	12	80	5.6	70	3.2	25	2.8	210	154
16	58	13	86	9.3	64	4.0	103	5.0	678	245	168	104
17	50	11	95	11	76	4.5	75	3.8	580	215	7320	70700
18	25	5.2	122	18	102	6.3	83	4.3	88	14	3080	11400
19	26	5.6	131	16	92	5.0	97	3.7	140	18	795	1300
20	48	11	134	21	46	2.2	67	2.2	1200	1620	370	849
21	50	12	139	17	50	2.6	78	4.0	680	296	345	482
22	44	12	40	4.9	49	3.7	62	3.3	365	80	262	348
23	36	8.2	102	17	52	3.5	45	2.2	154	23	2660	40100
24	27	4.9	147	21	38	2.5	74	3.6	123	13	5430	75200
25	22	3.6	190	21	78	4.6	56	5.4	89	7.2	2140	9420
26	17	2.7	128	11	77	4.2	58	3.1	76	7.0	900	1760
27	27	4.0	120	10	75	3.4	45	2.3	861	2040	572	927
28	32	4.4	126	13	387	80	61	3.0	5400	143000	421	532
29	30	4.1	130	13	348	38	78	3.8	2280	12500	320	365
30	43	5.8	96	8.8	97	7.6	60	2.6	682	901	430	525
31	---	---	77	7.7	---	---	62	2.5	12100	617000	---	---
TOTAL	---	2875.6	---	752.7	---	270.7	---	131.7	---	789337.7	---	1622847
TOTAL LOAD FOR YEAR: 2433755.61 TONS.												

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	NUMBER OF SAM- PLING POINTS (00063)	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SUS- PENDE D SEDI- MENT (MG/L) (80154)	SUS- PENDE D SEDI- MENT (T/DAY) (80155)	SUS. SED. FALL DIAM. % FINER THAN .002 MM (70337)	SUS. SED. FALL DIAM. % FINER THAN .004 MM (70338)
OCT								
21...	1055	5.5	3	39	---	---	---	---
MAR								
12...	1400	---	---	359	3060	2970	62	64
29...	1415	9.0	---	562	4280	6490	54	59
30...	1100	8.0	3	384	---	---	---	---
JUN								
22...	1040	21.5	3	30	---	---	---	---
AUG								
09...	1655	23.0	---	1180	2360	7520	64	70
31...	0830	---	---	13340	9780	352000	35	41
SEP								
02...	0745	---	---	17280	15400	718000	34	40
17...	0820	---	---	5080	12000	165000	40	43
21...	1700	20.5	3	486	---	---	---	---
24...	0930	---	---	4480	6200	75000	40	44

NODAWAY RIVER BASIN
06817000 NODAWAY RIVER AT CLARINDA, IA--Continued
WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	SUS. SED. FALL DIAM. X FINER THAN (70339)	SUS. SED. FALL DIAM. X FINER THAN (70340)	SUS. SED. FALL DIAM. X FINER THAN (70342)	SUS. SED. FALL DIAM. X FINER THAN (70343)	SUS. SED. FALL DIAM. X FINER THAN (70344)	SUS. SED. FALL DIAM. X FINER THAN (70345)	SUS. SED. FALL DIAM. X FINER THAN (70331)	BED MAT. SIEVE DIAM. X FINER THAN (80184)	BED MAT. SIEVE DIAM. X FINER THAN (80165)
OCT 21...	--	--	--	--	--	--	--	0	1
MAR 12...	68	72	98	--	--	--	99	--	--
29...	66	79	--	--	--	--	--	1	3
JUN 22...	--	--	--	--	--	--	--	1	1
AUG 09...	76	81	99	99	100	--	--	--	--
31...	42	53	97	99	100	--	--	--	--
SEP 02...	40	50	92	97	100	--	--	--	--
17...	43	55	93	97	100	--	--	1	1
21...	--	--	--	--	--	--	--	--	--
24...	46	58	94	97	99	100	--	--	--

DATE	BED MAT. SIEVE DIAM. X FINER THAN (80166)	BED MAT. SIEVE DIAM. X FINER THAN (80167)	BED MAT. SIEVE DIAM. X FINER THAN (80168)	BED MAT. SIEVE DIAM. X FINER THAN (80169)	BED MAT. SIEVE DIAM. X FINER THAN (80170)	BED MAT. SIEVE DIAM. X FINER THAN (80171)	BED MAT. SIEVE DIAM. X FINER THAN (80172)	BED MAT. SIEVE DIAM. X FINER THAN (80173)
OCT 21...	14	42	81	89	92	95	98	100
MAR 12...	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	90	97	100
JUN 22...	9	39	66	79	86	86	95	100
AUG 09...	15	50	67	75	80	--	--	--
31...	--	--	--	--	--	--	--	--
SEP 02...	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--
21...	10	29	44	60	71	82	95	97
24...	--	--	--	--	--	--	--	--

PLATTE RIVER BASIN

205

05818750 PLATTE RIVER NEAR DIAGONAL, IA

LOCATION.--Lat 40°46'02", long 94°24'45", in NE1/4 NW1/4 sec.22, T.69 N., R.31 W., Ringgold County, Hydrologic Unit 10240012, on left bank at downstream side of bridge on county highway, 2.2 mi (3.5 km) upstream from Turkey Creek, 4.6 mi (7.4 km) southwest of Diagonal, and 4.9 mi (7.9 km) downstream from Gard Creek.

DRAINAGE AREA.--217 mi² (562 km²).

PERIOD OF RECORD.--April 1968 to current year.

REVISED RECORDS.--VSP 2119: 1969 (P).

GAGE.--Water stage recorder. Datum of gage is 1,095.27 ft (333.838 m) above mean sea level.

REMARKS.--Records fair except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--9 years, 120 ft³/s (3,398 m³/s), 7.51 in/yr (191 mm/yr), 86,940 acre-ft/yr (107 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,420 ft³/s (182 m³/s) Oct. 12, 1973, gage height, 23.24 ft (7.084 m); minimum daily, 0.21 ft³/s (0.006 m³/s) Jan. 14, 15, 1969.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1967 reached a stage of 23.16 ft (7.059 m), from flood ark by local resident, discharge, 6,360 ft³/s (180 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft³/s (34.0 m³/s) and maximum ("):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)
Aug. 28	1100	2,780 78.7	15.83 4.825	Sept. 18	0100	2,590 73.3	15.23 4.642
Sept. 1	0700	3,300 93.5	17.00 5.182	Sept. 24	0400	2,010 56.9	13.57 4.136
Sept. 2	1415	*4,250 120.	*19.28 5.876				

Minimum daily discharge, 0.74 ft³/s (0.021 m³/s) Jan. 4-7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	3.5	4.0	.77	.90	19	26	6.8	6.5	4.6	4.5	2320
2	3.1	3.5	3.8	.76	.94	19	51	6.0	6.2	4.5	6.3	3060
3	3.1	3.4	3.7	.75	1.0	19	56	6.9	5.0	5.3	7.6	2740
4	7.1	2.9	3.6	.74	1.1	18	110	9.9	4.7	5.2	8.8	2190
5	5.6	2.4	3.5	.74	1.3	18	135	8.2	4.4	4.6	11	726
6	3.5	3.0	3.9	.74	1.4	18	62	5.4	4.3	2.5	11	292
7	3.4	3.1	3.3	.74	1.7	18	44	4.7	3.5	2.8	8.8	175
8	3.8	3.1	2.7	.75	2.0	18	35	3.9	2.9	4.1	12	129
9	4.2	3.2	2.6	.75	2.3	17	27	4.0	2.3	5.6	477	101
10	3.6	3.9	2.6	.75	2.7	17	23	3.0	2.2	5.9	146	89
11	3.4	3.1	2.2	.76	3.5	20	19	2.6	2.0	7.2	41	65
12	4.3	3.0	2.0	.76	4.2	30	15	2.1	2.4	5.6	28	75
13	5.3	3.0	2.0	.77	4.3	45	15	2.6	2.5	2.7	28	369
14	3.1	3.0	2.1	.78	4.0	55	15	1.9	2.3	1.2	32	183
15	3.1	3.0	2.3	.80	3.8	35	14	1.7	2.7	1.2	33	121
16	3.1	3.4	2.4	.81	3.7	25	12	2.1	4.5	1.2	42	100
17	3.1	4.0	2.5	.82	4.2	20	11	1.9	3.8	1.3	39	1080
18	2.2	5.2	2.6	.83	5.0	17	11	1.3	3.0	2.5	44	1340
19	3.8	5.2	2.6	.84	6.0	15	11	1.4	2.2	1.4	41	302
20	2.1	6.1	2.6	.85	6.8	13	12	2.5	2.0	1.4	42	176
21	2.1	6.9	2.5	.86	7.7	12	14	3.5	4.3	1.3	43	133
22	2.1	6.6	2.4	.86	8.4	11	15	2.0	3.1	1.4	43	110
23	2.1	6.7	1.7	.87	9.2	8.0	13	2.1	2.7	1.4	47	309
24	2.5	6.4	1.4	.88	10	6.0	10	2.6	2.8	1.4	45	1270
25	3.1	6.3	1.2	.88	12	5.2	9.0	3.1	4.0	2.8	43	300
26	3.3	5.9	1.0	.88	14	5.2	8.2	3.0	4.2	4.0	45	180
27	4.2	5.5	.96	.89	16	24	8.0	4.9	4.2	1.3	46	133
28	3.2	5.0	.90	.90	19	232	7.4	5.9	4.2	1.2	1640	109
29	3.1	4.7	.86	.89	---	408	7.1	6.6	4.2	2.7	350	95
30	3.5	4.2	.83	.88	---	72	6.9	7.4	4.2	3.8	95	90
31	3.6	---	.78	.88	---	38	---	6.8	---	5.4	1600	---
TOTAL	106.8	129.2	71.53	25.18	157.14	1277.4	802.6	126.8	107.3	97.5	5060.0	10382
MEAN	3.45	4.31	2.31	.81	5.61	41.2	26.8	4.09	3.58	3.15	163	613
MAX	7.1	6.9	4.0	.90	19	408	135	9.9	6.5	7.2	1640	3060
MIN	2.1	2.4	.78	.74	.90	5.2	6.9	1.3	2.0	1.2	4.5	65
CFSM	.02	.02	.01	.004	.03	.19	.12	.02	.02	.02	.75	2.83
IN.	.02	.02	.01	.00	.03	.22	.14	.02	.02	.02	.87	3.15
AC-FT	212	256	142	50	312	2530	1590	252	213	193	10040	35460

CAL YR 1976 TOTAL 35540.63 MEAN 97.1 MAX 5140 MIN .78 CFSM .45 IN 6.09 AC-FT 70490
WTR YR 1977 TOTAL 26243.45 MEAN 72.2 MAX 3060 MIN .74 CFSM .33 IN 4.52 AC-FT 52250

PLATTE RIVER BASIN

06819190 EAST FORK ONE HUNDRED AND TWO RIVER NEAR BEDFORD, IA

LOCATION.--Lat 40°38'01", long 94°44'41". In NE1/4 NE1/4 sec.9, T.67 N., R.34 W., Taylor County, Hydrologic Unit 10240013, on left bank at downstream side of bridge of county highway 355, 0.4 mi (0.6 km) upstream from Daugherty Creek, and 2.8 mi (4.5 km) southwest of junction of U.S. Highways 2 and 148 in Bedford.

DRAINAGE AREA.--92.1 mi² (238.5 km²).

PERIOD OF RECORD.--September 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,057.61 ft (322.329 m) above mean sea level (levels by Corps of Engineers). Prior to Oct. 1, 1968, at datum 5.00 ft (1.524 m) higher.

REMARKS.--Records fair except those for winter period, which are poor. Slight regulation at low flow by low dam used for water supply in Bedford. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--18 years, 49.9 ft³/s (1.413 m³/s), 7.35 in/yr (187 mm/yr), 36,150 acre-ft/yr (44.6 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,980 ft³/s (283 m³/s) Oct. 11, 1973, gage height, 20.72 ft (6.315 m); maximum gage height, 20.95 ft (6.386 m) Jan. 12, 1960, present datum; no flow at times in 1966-68, 1972, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (56.6 m³/s) and maximum (""):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)
Aug. 9	1300	2,580 75.9	10.75 3.277	Sept. 2	1015	2,370 67.1	9.12 2.780
Aug. 28	0715	4,600 130	13.17 4.014	Sept. 3	1715	2,890 81.8	10.16 3.097
Aug. 31	0730	*4,690 138	*13.65 4.161	Sept. 24	0145	2,080 58.9	8.50 2.591

No flow, Jan. 16 to Feb. 7, Aug. 2, 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.70	.36	.16	.04	.00	1.0	3.4	.53	.32	.18	.01	544
2	.80	.33	.15	.03	.00	.95	16	.48	.30	.12	.00	1310
3	1.1	.35	.16	.03	.00	3.0	18	1.7	.29	.15	.00	1620
4	3.6	.35	.15	.03	.00	1.5	34	18	.32	.11	.02	1660
5	1.2	.34	.15	.02	.00	.95	42	3.5	.33	.08	1.3	342
6	1.1	.47	.13	.02	.00	.90	17	2.3	.30	.07	1.8	82
7	.79	.41	.10	.02	.00	.85	12	.97	.27	.10	.05	91
8	.67	.36	.09	.02	.01	.95	8.7	2.6	.24	.77	.17	37
9	.67	.52	.08	.02	.02	1.0	6.0	5.8	.27	.15	1150	28
10	.67	.45	.08	.01	.03	1.2	3.8	2.0	.22	.09	281	20
11	.79	.35	.07	.01	.04	3.0	2.8	.95	.27	2.4	.39	16
12	.85	.32	.07	.01	.05	15	3.3	.71	1.4	.14	12	174
13	.74	.35	.07	.01	.06	2.0	2.9	.43	.70	.07	6.2	285
14	.72	.38	.07	.01	.04	1.0	2.5	.37	.44	.05	1.5	71
15	.60	.40	.07	.01	.03	.90	2.5	.34	.34	.05	.92	44
16	.58	.42	.07	.00	.03	.80	2.3	.32	.27	.03	43	39
17	.72	.44	.08	.00	.10	.70	2.1	.32	.34	.02	26	34
18	.62	.46	.08	.00	.20	.68	1.6	.35	.79	.03	6.6	37
19	.65	.46	.09	.00	.40	.60	1.7	.44	.31	.02	2.2	25
20	.41	.51	.10	.00	1.0	.58	1.1	1.6	.27	.03	33	17
21	.37	.50	.09	.00	3.0	.56	1.5	.60	2.7	.02	7.8	16
22	.34	.41	.08	.00	5.0	.54	1.3	1.1	1.8	.02	11	13
23	.38	.46	.09	.00	8.0	.52	1.1	.60	.32	.02	3.7	180
24	.47	.53	.08	.00	10	.50	.71	.40	.23	.02	1.3	817
25	.34	.56	.09	.00	7.0	.59	.49	.32	.22	.10	.46	82
26	.41	.48	.10	.00	5.0	.60	.43	.34	.16	.03	.36	35
27	.36	.25	.12	.00	3.0	.30	.40	.36	.17	.01	1.1	24
28	.34	.20	.10	.00	1.5	5.0	.45	.71	21	.01	2770	19
29	.34	.18	.08	.00	---	20	.43	.52	.24	.02	478	18
30	.74	.17	.05	.00	---	16	.47	.40	.21	.02	60	17
31	.53	---	.05	.00	---	4.0	---	.37	---	.01	2450	---
TOTAL	22.60	11.77	2.94	.29	44.51	115.65	191.99	47.54	35.04	4.91	7397.50	7015
MEAN	.73	.39	.095	.009	1.59	3.73	6.40	1.53	1.17	.16	239	234
MAX	3.6	.86	.18	.04	10	30	42	16	21	2.4	2770	1620
MIN	.34	.17	.05	.00	.00	.50	.40	.32	.16	.01	.00	13
CFSM	.008	.004	.001	.000	.02	.04	.07	.02	.01	.002	2.60	2.54
IN	.01	.00	.00	.00	.02	.05	.08	.02	.01	.00	2.99	2.83
AC-FT	46	23	5.8	.6	88	229	381	94	70	9.7	14670	13910

CAL YR 1976 TOTAL 17881.29 MEAN 48.9 MAX 3070 MIN .05 CFSM .53 IN 7.22 AC-FT 35470
VTR YR 1977 TOTAL 14869.74 MEAN 40.8 MAX 2770 MIN .00 CFSM .44 IN 6.01 AC-FT 29530

GRAND RIVER BASIN

207

06897950 ELK CREEK NEAR DECATUR CITY, IA
(Hydrologic bench-mark station)

LOCATION.--Lat 40°43'18", long 93°55'12", near the southeast corner sec.34, T.89 N., R.27 W., Decatur County, Hydrologic Unit 10280102, at right downstream corner of bridge on county highway, 1,000 ft (305 m) downstream from West Elk Creek, 5.2 mi (8.4 km) upstream from mouth, and 5.7 mi (9.2 km) southwest of Decatur City.

DRAINAGE AREA.--52.5 mi² (136 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 924.70 ft (281.949 m) above mean sea level. Oct. 1, 1967, to Sept. 30, 1974, at datum 10.00 ft (3.05 m) higher.

REMARKS.--Records good except those for winter period, which are poor.

AVERAGE DISCHARGE.--10 years, 29.4 ft³/s (0.833 m³/s), 7.60 in/yr (193 mm/yr), 21,300 acre-ft/yr (26.3 km³/yr); median of yearly discharges, 25 ft³/s (0.71 m³/s), 6.5 in/yr (165 mm/yr), 18,100 acre-ft/yr (22.3 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,400 ft³/s (323 m³/s) Apr. 24, 1976, gage height, 25.80 ft (7.854 m), from rating curve extended above 5,300 ft³/s (150 m³/s) on basis of step-backwater computation; no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 14, 1967, reached a stage of 18.35 ft (5.593 m), datum in use prior to Oct. 1, 1974, discharge, 15,000 ft³/s (425 m³/s), estimated from rating curve extended above 5,300 ft³/s (150 m³/s) on basis of step-backward computation. Flood of Aug. 8, 1959, reached a stage between 20.5 and 22.8 ft (6.25 and 6.96 m), datum in use prior to Oct. 1, 1974, 380 ft (91 m) downstream, from information by assistant county engineer, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 320 ft³/s (9.08 m³/s) Sept. 2, gage height, 13.60 ft (4.145 m), no peak above base of 500 ft³/s (14.2 m³/s); no flow Oct. 1-Feb. 7, May 12-15, 17-19, 26-29, 31, June 1-July 7, July 9, 10, 12-24, 26-Aug. 1, Sept. 21-23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.20	1.7	.18	.00	.00	.00	26
2	.00	.00	.00	.00	.00	.20	8.8	.20	.00	.00	.05	105
3	.00	.00	.00	.00	.00	.20	3.1	.21	.00	.00	.02	66
4	.00	.00	.00	.00	.00	.20	28	.23	.00	.00	.02	71
5	.00	.00	.00	.00	.00	.20	16	.17	.00	.00	.04	17
6	.00	.00	.00	.00	.00	.21	5.4	.25	.00	.00	.14	3.8
7	.00	.00	.00	.00	.00	.21	3.7	.45	.00	.00	.18	1.4
8	.00	.00	.00	.00	.10	.21	2.4	.22	.00	.29	.81	.62
9	.00	.00	.00	.00	.40	.21	1.9	.09	.00	.00	3.2	.25
10	.00	.00	.00	.00	1.0	.21	1.2	.03	.00	.00	5.8	.13
11	.00	.00	.00	.00	3.5	.22	.08	.01	.00	.10	2.5	.09
12	.00	.00	.00	.00	10	.20	.65	.00	.00	.00	1.0	2.6
13	.00	.00	.00	.00	5.0	.15	.68	.00	.00	.00	.19	22
14	.00	.00	.00	.00	1.8	.10	.71	.00	.00	.00	.14	6.7
15	.00	.00	.00	.00	.88	.70	.63	.00	.00	.00	.12	1.4
16	.00	.00	.00	.00	.27	5.0	.53	.15	.00	.00	.61	.66
17	.00	.00	.00	.00	.28	4.0	.59	.00	.00	.00	.49	.67
18	.00	.00	.00	.00	.23	3.2	.74	.00	.00	.00	.38	.35
19	.00	.00	.00	.00	.22	2.7	.70	.00	.00	.00	.38	.16
20	.00	.00	.00	.00	.21	2.3	11	.01	.00	.00	.38	.03
21	.00	.00	.00	.00	.21	5.0	47	.52	.00	.00	.38	.00
22	.00	.00	.00	.00	.21	11	5.8	2.2	.00	.00	.34	.00
23	.00	.00	.00	.00	3.0	.50	3.6	.27	.00	.00	.34	.00
24	.00	.00	.00	.00	2.0	.24	1.9	.07	.00	.00	.34	13
25	.00	.00	.00	.00	1.1	.16	.96	.05	.00	.05	.88	3.1
26	.00	.00	.00	.00	.70	.15	.73	.00	.00	.00	.71	.90
27	.00	.00	.00	.00	.20	.32	.64	.00	.00	.00	3.6	.35
28	.00	.00	.00	.00	.20	.48	.41	.00	.00	.00	26	.12
29	.00	.00	.00	.00	---	20	.25	.00	.00	.00	5.7	.05
30	.00	.00	.00	.00	---	4.4	.18	.05	.00	.00	.66	1.7
31	.00	---	.00	.00	---	2.3	---	.00	---	.00	.80	---
TOTAL	.00	.00	.00	.00	31.40	173.64	147.28	5.36	.00	.44	126.39	343.98
MEAN	.000	.000	.000	.000	1.12	5.60	4.91	.17	.000	.014	4.08	11.5
MAX	.00	.00	.00	.00	.10	.48	.47	2.2	.00	.29	.71	105
MIN	.00	.00	.00	.00	.00	.15	.18	.00	.00	.00	.00	.00
CFSM	.000	.000	.000	.000	.02	.11	.09	.003	.000	.000	.08	.22
IN.	.00	.00	.00	.00	.02	.12	.10	.00	.00	.00	.09	.24
AC-FT	.00	.00	.00	.00	.62	244	292	11	.00	.9	261	682

CAL YR 1976 TOTAL 10969.07 MEAN 30.0 MAX 3330 MIN .00 CFSM .67 IN 7.77 AC-FT 21760
WTR YR 1977 TOTAL 828.49 MEAN 2.27 MAX 105 MIN .00 CFSM .04 IN .69 AC-FT 1640

GRAND RIVER BASIN

05897950 ELK CREEK NEAR DECATUR CITY, IA--Continued
(Hydrologic bench-mark station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958 to current year.

REMARKS.--Miscellaneous biological data collected September 1970 to September 1972 are available in the District office.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00081)	DIS- SOLVED SILICA (SI02) (MG/L) (00985)	TOTAL IRON (FE) (UG/L) (01045)	TOTAL MAN- GANESE (MN) (UG/L) (01055)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	PERCENT SODIUM (00932)	SODIUM AD- SORP- TION RATIO (00931)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)
MAR 23...	1055	.62	3.7	--	--	74	18	24	16	.7	4.8
APR 19...	1045	1.69	5.3	670	360	72	17	14	11	.4	5.8
MAY 25...	0840	1.06	6.6	--	--	78	18	12	9	.3	6.0
SEP 14...	0800	7.1	9.9	--	--	39	8.6	6.0	8	.2	9.3

DATE	DIS- SOLVED SOLIDS (TONS PER DAY) (70302)	HARD- NESS (CA, MG) (MG/L) (00900)	NON- CAR- BORATE HARD- NESS (MG/L) (00902)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	CARBON DIOXIDE (CO2) (MG/L) (00405)	IMME- DIATE COLI- FORM (COL./ 100 ML) (31501)	FECAL COLI- FORM (COL./ 100 ML) (31625)	FECAL STREP- TOCOCCI KF AGAR (COL./ 100 ML) (31673)
MAR 23...	.88	260	75	510	--	7.0	--	--	--	--
APR 19...	.64	280	48	420	8.0	18.0	4.0	5600	700	10000
MAY 25...	.05	270	49	480	8.0	20.6	4.3	300	--	520
SEP 14...	3.37	130	18	380	7.4	15.0	8.9	--	--	--

DATE	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (MG/L) (00445)	ALKA- LINITY AS CACO3 (MG/L) (00410)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)	TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)	DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300)	DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L) (70301)	DIS- SOLVED SOLIDS (TONS AC-FT) (70303)
MAR 23...	224	--	184	78	11	.1	.01	.04	349	324	.47
APR 19...	250	0	205	65	11	.2	.01	.06	342	313	.47
MAY 25...	270	0	221	50	9.7	.2	.02	.06	324	314	.44
SEP 14...	140	0	110	29	4.9	.2	.59	.35	--	176	.24

DATE	CYANIDE (CN) (00729)	TOTAL ARSENIC (AS) (UG/L) (01002)	TOTAL BARIUM (BA) (UG/L) (01007)	TOTAL CAD- MIUM (CD) (UG/L) (01027)	TOTAL CHRO- MIUM (CR) (UG/L) (01034)	TOTAL COPPER (CU) (UG/L) (01042)	TOTAL LEAD (PB) (UG/L) (01051)	TOTAL MERCURY (HG) (UG/L) (71900)	TOTAL SELE- NIUM (SE) (UG/L) (01147)	TOTAL SILVER (AG) (UG/L) (01077)	TOTAL ZINC (ZN) (UG/L) (01092)
APR 19...	.80	2	200	2	10	3	35	.0	0	0	28

DATE	TOTAL ALDRIN (UG/L) (39330)	ALDRIN IN BOTTOM MA- TERIAL (UG/KG) (39333)	TOTAL CHLOR- DANE (UG/L) (39360)	CHLOR- DANE IN BOTTOM MA- TERIAL (UG/KG) (39361)	TOTAL DDD (UG/L) (39360)	DDD IN BOTTOM MA- TERIAL (UG/KG) (39363)	TOTAL DDE (UG/L) (39365)	DDE IN BOTTOM MA- TERIAL (UG/KG) (39368)	TOTAL DDT (UG/L) (39370)	DDT IN BOTTOM MA- TERIAL (UG/KG) (39373)	TOTAL DI- AZINON (UG/L) (39670)
MAR 23...	.00	.0	.0	0	.00	.0	.00	.0	.00	.0	.00

GRAND RIVER BASIN

209

0689750 ELK CREEK NEAR DECATUR CITY, IA--Continued
(Hydrologic bench-mark station)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

DATE	TOTAL DI- ENDRIN (UG/L) (39388)	DI- ENDRIN IN BOTTOM MA- TERIAL (UG/KG) (39383)	TOTAL ENDO- SULFAN (UG/L) (39388)	TOTAL ENDRIN (UG/L) (39390)	ENDRIN IN BOTTOM MA- TERIAL (UG/KG) (39393)	TOTAL ETHION (UG/L) (39398)	TOTAL HEPTA- CHLOR (UG/L) (39410)	HEPTA- CHLOR IN BOTTOM MA- TERIAL (UG/KG) (39413)	TOTAL HEPTA- CHLOR EPOKIDE (UG/L) (39420)	HEPTA- CHLOR EPOKIDE IN BOT- TOM MA- TERIAL (UG/KG) (39423)	TOTAL LINDANE (UG/L) (39340)
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MAR 23... .00 .2 .00 .00 .0 .00 .00 .0 .00 .0 .00

DATE	LINDANE IN BOTTOM MA- TERIAL (UG/KG) (39343)	TOTAL MALA- THION (UG/L) (39630)	TOTAL METHYL PARA- THION (UG/L) (39600)	TOTAL METHYL TRI- THION (UG/L) (39790)	TOTAL PARA- THION (UG/L) (39540)	TOTAL PCB (UG/L) (39516)	PCB IN BOTTOM MA- TERIAL (UG/KG) (39519)	POLY- CHLO- RINATED NAPH- THA- LENES (UG/L) (39250)	TOTAL TRI- THION (UG/L) (39786)	TOTAL 2,4-D (UG/L) (39720)
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MAR 23... .0 .00 .00 .00 .00 .0 0 .00 .00 .01

DATE	TOTAL 2,4,5-T (UG/L) (39740)	TOTAL SILVER (UG/L) (39760)	DIS- SOLVED GROSS ALPHA AS U-NAT. (UG/L) (80030)	SUS- PENDE GROSS ALPHA AS U-NAT. (UG/L) (80040)	DIS- SOLVED GROSS BETA AS CS-137 (PC/L) (03515)	SUS- PENDE GROSS BETA AS CS-137 (PC/L) (03515)	DIS- SOLVED GROSS BETA AS SR90 /Y90 (PC/L) (80050)	SUS- PENDE GROSS BETA AS SR90 /Y90 (PC/L) (80060)	DIS- SOLVED RA-226 METHOD (PC/L) (09511)	DIS- SOLVED NATURAL URANIUM (U) (22703)
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MAR 23... .00 .00 <5.3 <.4 0.4 1.7 6.0 1.0 .05 2.9

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SUS- PENDE SEDI- MENT (MG/L) (80154)	SUS- PENDE SEDI- MENT (T/DAY) (80155)	SUS- SED. SIEVE DIAM. X FINER 0.062 MM (70331)
APR 19...	1045	18.0	.69	33	.06	97
MAY 26...	0840	20.5	.06	86	.01	84

GRAND RIVER BASIN

08898000 THOMPSON RIVER AT DAVIS CITY, IA

LOCATION.--Lat 40°38'25", long 93°48'29", in SE1/4 SE1/4 sec.35, T.68 N., R.26 W., Decatur County, Hydrologic Unit 10280102, on right bank 15 ft (3 m) downstream from bridge on U.S. Highway 89 at Davis City, 2.6 mi (4.2 km) upstream from Dickersons Branch, and 5.2 mi (8.4 km) upstream from Iowa-Missouri State line.

DRAINAGE AREA.--701 mi² (1,816 km²).

PERIOD OF RECORD.--May 1918 to July 1925, July 1941 to current year. Monthly discharge only for some periods, published in WSP 1310. Prior to October 1918, published as "Grand River".

REVISED RECORDS.--WSP 1240: 1918, 1920-21 (M), 1922-24, 1925 (M), 1946-47 (M). WSP 1440: Drainage area. WSP 1710: 1957.

GAGE.--Water-stage recorder. Datum of gage is 874.04 ft (266.407 m) above mean sea level. May 14, 1918, to July 2, 1925, July 14, 1941, to Feb. 24, 1942, nonrecording gage, and Feb. 25, 1942, to Feb. 9, 1967, water-stage recorder at same site at datum 2.00 ft (0.61 m) higher.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--42 years (1918-24, 1941-77), 362 ft³/s (10,252 m³/s), 7.01 in/yr (178 mm/yr), 262,300 acre-ft/yr (329 hm³/yr); median of yearly mean discharges, 300 ft³/s (8,50 m³/s) 5.8 in/yr (147 mm/yr) 217,000 acre-ft/yr (277 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,300 ft³/s (688 m³/s) June 10, 1974, gage height, 19.43 ft (5.92 m), from rating curve extended above 17,000 ft³/s (481 m³/s) on basis of velocity-area study; minimum daily, 0.1 ft³/s (0.003 m³/s) June 25, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 8, 1885, reached a stage of 22.8 ft (6.95 m), datum in use prior to Feb. 9, 1967, from floodmark, discharge, 30,000 ft³/s (850 m³/s), from rating curve extended as explained above.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,120 ft³/s (88.4 m³/s) Sept. 3, gage height, 8.12 ft (2.48 m), no peak above base of 4,500 ft³/s (127 m³/s); minimum daily, 0.17 ft³/s (0.005 m³/s) July 8, 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	12	5.3	2.7	3.1	63	174	24	9.3	.90	1.4	906
2	12	12	5.0	2.7	3.1	62	111	25	8.6	.65	3.6	2680
3	11	11	4.7	2.7	3.3	61	96	24	8.2	.70	2.6	3030
4	10	11	4.8	2.7	3.8	61	150	23	7.1	.90	2.1	2890
5	13	11	5.1	2.7	4.0	59	201	26	7.1	.90	3.6	2070
6	11	12	4.9	2.7	4.9	59	253	27	7.1	.17	10	658
7	9.2	17	4.0	2.7	5.5	58	195	42	6.7	.17	9.2	364
8	9.1	11	4.3	2.7	5.5	57	155	43	5.7	.70	17	241
9	8.8	10	4.2	2.7	6.6	57	105	43	4.5	1.2	48	183
10	7.9	9.7	4.4	2.7	7.9	56	79	43	3.8	4.0	84	185
11	7.0	8.5	4.0	2.7	8.5	56	67	38	3.8	4.4	40	180
12	9.7	7.7	4.4	2.7	15	73	59	33	3.8	3.6	15	148
13	8.6	8.1	4.8	2.8	16	129	52	27	3.8	2.5	7.8	206
14	7.5	8.2	5.2	2.8	18	182	47	23	3.8	1.4	6.5	248
15	6.9	7.8	5.4	2.8	18	117	43	20	3.8	.88	4.9	230
16	6.3	8.4	5.6	2.9	19	74	41	20	3.5	4.2	7.4	170
17	5.8	9.3	5.8	2.9	20	56	40	20	3.0	3.6	6.8	182
18	5.2	10	6.0	3.0	21	44	40	18	2.8	3.6	4.2	1920
19	5.5	10	6.1	3.0	22	35	38	16	2.6	2.5	2.9	1930
20	5.5	10	5.9	3.0	24	34	39	16	2.5	1.7	2.3	825
21	5.3	9.8	5.7	3.1	25	32	373	15	1.4	2.5	2.4	287
22	5.7	9.7	5.2	3.1	27	32	221	20	2.6	2.4	2.3	203
23	5.9	9.9	4.3	3.0	29	33	103	24	2.7	1.7	.90	172
24	5.5	11	4.0	3.0	33	31	75	25	2.6	1.7	.70	183
25	5.1	11	3.8	3.0	37	30	86	16	2.5	2.8	.70	734
26	5.1	11	3.5	3.0	42	29	45	13	2.6	2.4	117	611
27	5.8	7.7	3.3	3.0	49	27	39	11	6.2	1.7	330	268
28	6.5	6.5	3.1	3.0	57	52	35	12	2.4	1.9	113	192
29	14	6.0	3.0	3.0	---	581	29	13	1.4	2.2	381	162
30	15	6.6	2.9	3.0	---	526	25	12	1.4	1.9	955	183
31	12	---	2.8	3.0	---	292	---	10	---	1.9	342	---
TOTAL	257.8	293.0	141.5	88.8	529.2	3058	3066	731	125.3	61.34	2504.10	21791
MEAN	8.32	9.77	4.55	2.86	18.9	98.6	102	23.6	4.21	1.98	80.0	726
MAX	15	17	6.1	3.1	57	581	373	43	9.3	4.4	956	3030
MIN	5.1	5.6	2.8	2.7	3.1	27	25	10	1.4	.17	.70	148
CFSM	.01	.01	.007	.004	.03	.14	.15	.03	.006	.003	.12	1.04
IN.	.01	.02	.01	.00	.03	.16	.16	.04	.01	.00	.13	1.16
AC-FT	511	581	281	176	1050	6070	6080	1450	251	122	4970	43220

CAL YR 1976 TOTAL 120839.70 MEAN 330 MAX 11300 MIN 2.8 CFSM .47 IN 6.41 AC-FT 239700
VTR YR 1977 TOTAL 32648.04 MEAN 89.4 MAX 3030 MIN .17 CFSM .13 IN 1.73 AC-FT 64760

GRAND RIVER BASIN

211

06998400 WELDON RIVER NEAR LEON, IA

LOCATION.--Lat 40°41'45", long 93°38'07", in NE1/4 NE1/4 sec.17, T.88 N., R.24 W., Decatur County, Hydrologic Unit 10280102, on left bank 10 ft (3 m) downstream from bridge on county highway A, 200 ft (61 m) upstream from unnamed creek, 1.3 mi (2.1 km) downstream from Brush Creek, and 8.5 mi (10.8 km) southeast of post office at Leon.

DRAINAGE AREA.--104 mi² (269 km²).

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 905.26 ft (275.228 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--19 years, 69.2 ft³/s (1.960 m³/s), 9.04 in/yr (230 mm/yr), 50,140 acre-ft/yr (61.8 hm³/yr); median of yearly mean discharges, 51 ft³/s (1.44 m³/s), 6.7 in/yr (170 mm/yr), 36,900 acre-ft/yr (45.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 48,600 ft³/s (1,376 m³/s) Aug. 6, 1959, gage height, 25.27 ft (7.702 m), from rating curve extended above 5,600 ft³/s (159 m³/s) on basis of contracted-opening and flow-over-embankment measurement at gage height 25.27 ft (7.702 m); no flow for several days in 1968 and 1975, and many days in 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Stage and discharge of the flood of Aug. 6, 1959, are the greatest since at least 1919.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,480 ft³/s (41.3 m³/s) Aug. 9, gage height, 10.84 ft (3.304 m), no peak above base of 4,500 ft³/s (127 m³/s); no flow Oct. 13-17, Dec. 31 - Feb. 7, June 2, 3, 6, 7, 15, 16 and July 6-8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.10	1.9	.38	.00	.00	4.2	8.7	1.0	.02	.09	.53	193
2	.10	1.0	.37	.00	.00	4.3	8.9	.55	.00	.06	14	241
3	.98	.60	.35	.00	.00	4.3	8.8	.55	.00	.37	18	401
4	6.2	.58	.35	.00	.00	4.2	107	.70	.02	.30	13	332
5	19	.34	.34	.00	.00	4.1	72	.55	.04	.02	83	74
6	1.6	.33	.34	.00	.00	4.0	19	2.9	.00	.00	47	30
7	.70	.42	.33	.00	.00	3.8	9.0	3.1	.00	.00	188	16
8	.55	.43	.33	.00	.05	3.2	6.8	.90	.69	.00	48	9.2
9	.40	.71	.32	.00	.20	2.1	1.6	.47	1.1	.68	392	5.4
10	.23	.91	.31	.00	.26	1.4	.85	.11	.31	.66	39	2.2
11	.16	.80	.31	.00	.45	22	3.7	.06	1.1	4.4	7.6	1.4
12	.16	.61	.30	.00	.55	49	2.6	.03	2.4	2.4	.23	132
13	.00	.62	.30	.00	.69	18	3.4	1.2	.03	.59	11	221
14	.00	.63	.29	.00	.84	7.5	.85	.05	.02	.06	18	49
15	.00	.63	.29	.00	1.0	1.8	1.0	4.1	.00	2.3	28	29
16	.00	.81	.29	.00	1.2	.84	1.6	16	.00	7.3	43	21
17	.00	1.1	.28	.00	1.4	.80	1.4	9.6	.01	2.1	44	65
18	.55	1.1	.28	.00	1.5	.53	1.2	5.4	.19	.85	52	71
19	.23	1.0	.28	.00	1.7	.33	1.4	5.5	.08	.65	55	25
20	.16	1.0	.28	.00	1.9	.40	49	9.7	.08	.39	58	11
21	.23	1.8	.28	.00	2.1	.61	265	19	.44	.21	53	5.7
22	.23	.52	.28	.00	2.4	.81	54	80	2.2	.38	60	2.5
23	.70	.44	.28	.00	2.8	.96	27	12	1.2	.09	66	2.3
24	.65	.59	.28	.00	3.2	.75	16	6.9	.64	.31	71	4.4
25	.40	.66	.28	.00	3.6	.81	9.4	5.9	.05	2.0	64	5.8
26	.40	.68	.27	.00	3.8	.70	4.9	.48	.42	1.4	58	5.0
27	.40	.50	.26	.00	4.0	.69	2.5	.67	.14	2.0	51	2.4
28	.55	.43	.24	.00	4.1	148	1.0	1.4	.63	1.3	41	.42
29	.70	.41	.23	.00	---	121	1.0	.25	.38	1.3	27	.16
30	1.4	.39	.05	.00	---	27	1.9	.14	.44	1.3	18	5.0
31	1.0	---	.00	.00	---	12	---	.12	---	.62	18	---
TOTAL	37.68	21.94	8.78	.00	37.74	449.93	689.50	189.33	10.25	34.14	1665.36	1962.68
MEAN	1.22	.73	.28	.000	1.35	14.5	23.0	6.11	.34	1.10	53.8	65.4
MAX	19	1.9	.38	.00	4.1	148	265	80	2.2	7.3	392	401
MIN	.00	.33	.00	.00	.00	.33	.85	.03	.00	.00	.23	.16
CFSM	.01	.007	.003	.000	.01	.14	.22	.06	.003	.01	.52	.60
IN.	.01	.01	.00	.00	.01	.16	.28	.07	.00	.01	.60	.70
AC-FT	75	44	17	.00	75	892	1370	376	20	68	3310	3890

CAL YR 1976 TOTAL 19847.99 MEAN 54.2 MAX 3890 MIN .00 CFSM .52 IN 7.10 AC-FT 39370
 VTR YR 1977 TOTAL 5109.53 MEAN 14.0 MAX 401 MIN .00 CFSM .14 IN 1.83 AC-FT 10130

CHARITON RIVER BASIN

05903400 CHARITON RIVER NEAR CHARITON, IA

LOCATION.--Lat 40°57'12", long 93°15'37", in SW1/4 NE1/4 sec.15, T.71 N., R.21 W., Lucas County, Hydrologic Unit 10280201, on right bank 15 ft (5 m) downstream from bridge on county highway 543, 0.4 mi (0.6 km) downstream from Wolf Creek, and 5.0 mi (8.0 km) southeast of Chariton.

DRAINAGE AREA.--182 mi² (471 km²).

PERIOD OF RECORD.--October 1955 to current year. Occasional low-flow measurements, water years 1958-60, 1962, 1964.

GAGE.--Water-stage recorder. Datum of gage is 917.96 ft (279.794 m) above mean sea level (levels by U.S. Weather Bureau from a Corps of Engineers bench mark).

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--12 years, 96.5 ft³/s (2.733 m³/s), 7.20 in/yr (183 mm/yr), 59,910 acre-ft/yr (85.2 hm³/yr); median of yearly mean discharges, 82 ft³/s (2.32 m³/s), 6.1 in/yr (155 mm/yr), 59,400 acre-ft/yr (73.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,320 ft³/s (179 m³/s) Aug. 8, 1970, gage height, 20.15 ft (6.142 m); maximum gage height, 20.20 ft (6.157 m) Oct. 12, 1973; no flow Aug. 1, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1950 reached a stage of about 23 ft (7.0 m), discharge, about 15,000 ft³/s (425 m³/s) and flood of June 5, 1947 reached a stage of 21.65 ft (6.599 m), from floodmark, discharge, 11,000 ft³/s (312 m³/s). A discharge of 0.08 ft³/s (0.002 m³/s) was measured on Oct. 30, 1963.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,490 ft³/s (42.2 m³/s) Aug. 27, gage height, 17.27 ft (5.264 m), at 0430 hours; no other peak above base of 1,200 ft³/s (34.0 m³/s); no flow Aug. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.19	2.8	.24	.23	.19	9.6	36	4.9	2.5	.15	.00	327
2	.14	2.3	.24	.23	.21	8.6	24	4.8	1.9	.11	.01	496
3	.05	2.0	.24	.23	.23	11	21	4.8	1.4	.12	.02	522
4	.09	.35	.24	.23	.25	15	98	5.1	1.2	.11	.05	479
5	3.2	.82	.24	.23	.25	11	248	4.6	1.1	.10	.21	314
6	4.4	.53	.24	.23	.25	9.0	106	4.0	.79	.06	1.2	137
7	2.1	.29	.24	.23	.25	8.2	83	4.5	.76	.05	.40	45
8	1.4	.29	.25	.23	.24	7.5	37	4.5	.55	.05	.31	22
9	1.4	.47	.25	.23	.35	8.0	20	3.9	.52	.02	.54	11
10	1.0	.53	.25	.23	.45	8.6	13	3.8	.55	.07	122	6.3
11	.67	.67	.25	.24	3.5	11	9.7	3.1	.55	.11	19	3.9
12	.67	.40	.25	.24	33	100	7.4	2.7	.64	.12	12	7.9
13	.97	.19	.25	.24	30	86	8.4	2.5	.49	.21	15	486
14	.53	.24	.25	.24	25	45	6.5	2.4	.49	.32	8.0	216
15	.35	.53	.25	.24	21	39	6.0	1.9	.37	.50	4.5	90
16	.29	.40	.25	.24	20	19	5.5	2.7	.34	1.2	19	49
17	.29	.67	.25	.25	19	13	5.0	3.9	.32	1.1	14	560
18	.47	.35	.25	.25	18	11	4.9	2.6	.49	.62	6.8	784
19	.47	.97	.25	.26	20	9.4	5.4	1.8	.43	.34	4.3	337
20	.67	1.3	.25	.26	22	9.8	16	1.7	.43	.12	2.5	114
21	.82	1.4	.25	.26	21	10	120	2.5	.29	.12	1.5	41
22	.74	2.0	.25	.26	20	14	80	4.8	.38	.05	.81	22
23	1.3	2.2	.25	.26	27	21	110	5.0	.21	.05	.60	15
24	1.2	3.2	.25	.25	34	19	56	4.3	.19	.10	.37	43
25	1.6	3.6	.24	.23	21	13	22	4.2	.15	.09	.34	61
26	1.5	1.3	.24	.22	17	11	13	5.8	.15	.06	.556	25
27	1.4	.68	.24	.19	15	11	9.2	4.5	.12	.04	1150	21
28	1.2	.28	.24	.17	11	133	6.9	3.4	.15	.03	494	13
29	1.1	.25	.23	.16	---	403	5.8	3.7	.09	.03	.567	8.5
30	1.5	.23	.23	.17	---	187	5.2	8.1	.09	.03	154	7.1
31	2.2	---	.23	.18	---	100	---	4.8	---	.01	136	---
TOTAL	33.91	31.24	7.58	7.11	380.17	1341.7	1187.0	121.1	17.85	6.09	3514.41	5253.7
MEAN	1.09	1.04	.24	.23	13.5	43.3	39.6	3.91	.60	.20	113	175
MAX	4.4	3.6	.25	.26	34	403	248	8.1	2.5	1.2	1150	784
MIN	.05	.19	.23	.15	.19	7.5	4.9	1.7	.09	.01	.00	3.9
CFSM	.006	.006	.001	.001	.008	.24	.22	.02	.003	.001	.62	.96
IN.	.01	.01	.00	.00	.08	.27	.24	.02	.00	.00	.72	1.08
AC-FT	67	62	15	14	754	2660	2350	240	35	12	6970	10440

CAL YR 1976 TOTAL 31910.90 MEAN 87.2 MAX 3340 MIN .05 CFSM .48 IN 6.51 AC-FT 53300
WTR YR 1977 TOTAL 11911.85 MEAN 32.6 MAX 1150 MIN .00 CFSM .18 IN 2.43 AC-FT 23630

CHARITON RIVER BASIN

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08903700 SOUTH FORK CHARITON RIVER NEAR PROMISE CITY, IA

LOCATION.--Lat 40°48'02", long 93°11'32", in SW1/4 SW1/4 sec.5, T.69 N., R.20 W., Wayne County, Hydrologic Unit 10280201, on right bank 20 ft (6 m) downstream from bridge on county highway 550, 1.3 mi (2.1 km) downstream from Jordan Creek and 4.3 mi (6.9 km) northwest of Promise City.

DRAINAGE AREA.--168 mi² (435 km²).

PERIOD OF RECORD.--October 1967 to current year. Occasional low-flow measurements, water years 1958-66, published as "near Bethlehem". Monthly discharge measurements for March 1965 to September 1967 available in files of Iowa City district office.

GAGE.--Water-stage recorder. Datum of gage is 913.70 ft (278.495 m) above mean sea level (Corps of Engineers bench mark).

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature made during the year.

AVERAGE DISCHARGE.--10 years, 94.9 ft³/s (2,688 m³/s), 7.67 in/yr (195 mm/yr) 68,760 acre-ft/yr (84.8 hm³/yr); median of yearly mean discharges, 82 ft³/s (2,322 m³/s), 6.6 in/yr (168 mm/yr) 59,400 acre-ft/yr (73.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,660 ft³/s (217 m³/s) Aug. 8, 1970, gage height, 21.32 ft (6.498 m); no flow July 6, 7, 21-24, 28-31, and Aug. 1, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 21, 1965, reached a stage of 25.5 ft (7.77 m), from floodmarks, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (56.6 m³/s) and maximum ("):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage Height (ft) (m)
Aug. 26	1615	4,520 128	18.75 5.715	Sept. 13	0745	2,940 83.3	15.27 4.654

No flow July 6, 7, 21-24, 28-31, and Aug. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	5.9	.50	.25	.16	15	19	4.5	2.2	.17	.00	512
2	2.0	5.5	.50	.25	.16	15	24	4.6	1.5	.13	.06	756
3	2.2	5.5	.50	.25	.16	20	20	4.3	1.0	.24	.35	340
4	4.3	5.6	.49	.24	.16	33	168	4.4	45	.16	.04	219
5	23	7.0	.48	.24	.15	26	174	5.2	21	.01	1.2	73
6	22	5.4	.38	.24	.14	17						
7	6.1	3.6	.38	.23	.14	12	55	7.1	4.4	.00	12	36
8	2.6	2.6	.38	.23	.16	11	20	7.5	2.3	.00	183	19
9	1.5	2.2	.39	.22	.35	9.6	15	5.5	1.6	.04	126	9.1
10	1.5	2.2	.40	.22	1.0	11	11	3.2	1.2	.23	337	5.9
11	1.7	2.4	.40	.21						.14	284	5.0
12	1.6	2.3		.21	4.0	27	8.9	2.6	1.2	.21	45	3.5
13	1.8	2.1	.42	.20	15	218	6.7	2.2	1.3	.36	29	195
14	2.9	1.8	.43	.19	25	34	6.7	1.9	3.4	.29	19	2160
15	3.6	2.1	.44	.19	31	20	7.4	1.6	2.2	.18	8.9	343
16							7.3	2.0	1.5	.06	24	63
17	3.6	2.1	.44	.18	22	16	6.5	2.4	1.0	.39	20	28
18	4.1	1.3	.44	.18	18	11	5.8	4.1	.69	.30	16	912
19	4.9	1.8	.44	.18	22	9.7	5.7	3.3	.57	.19	10	264
20	5.7	1.5	.43	.17	27	7.3	5.6	1.9	.41	.05	7.0	62
21	5.8	1.7	.43	.17	27	7.7	6.7	2.1	.30	.02	4.3	23
22	5.2	1.8	.42	.17	31	12	57	2.9				
23	4.7	1.8	.41	.17	42	21	40	5.6	.27	.00	3.4	12
24	5.6	1.7	.40	.17	57	37	26	5.6	.76	.00	2.7	8.3
25	5.3	1.6	.38	.17	40	26	17	9.9	.58	.00	3.1	6.8
26	5.0	1.8	.37	.18	31	15	11	4.0	.52	.00	3.6	95
27								33	.42	3.2	3.6	48
28	4.7	2.1	.35	.18	23	11	8.2	7.7	.26	1.1	2720	13
29	4.5	55	.33	.15	17	9.6	6.7	3.2	.17	.11	362	4.5
30	4.1	12	.31	.13	14	338	5.6	2.3	.27	.00	106	2.0
31	3.7	3.0	.29	.15	---	450	4.6	9.9	.30	.00	121	1.3
	4.1	.80	.27	.16	---	63	4.2	7.8	.21	.00	32	5.1
	5.0	---	.25	.15	---	28	---	3.8	---	.00	17	---
TOTAL	154.8	146.20	12.46	6.03	464.68	1609.9	785.6	164.9	97.63	7.58	4501.25	6124.5
MEAN	4.99	4.87	.40	.19	15.6	51.9	26.2	5.32	3.25	.24	145	204
MAX	23	55	.50	.25	57	450	174	33	46	3.2	2720	2160
MIN	1.5	.80	.25	.13	.14	7.3	4.2	1.8	.17	.00	.00	1.2
CFSM	.03	.03	.002	.001	.10	.31	.16	.03	.02	.001	.86	1.21
IN.	.03	.03	.00	.00	.10	.36	.17	.04	.02	.00	1.00	1.36
AC-FT	307	290	25	12	921	3190	1560	327	194	15	8930	12150

CAL VR 1976	TOTAL	33784.07	MEAN 92.3	MAX 5340	MIN .21	CFSM .55	IN 7.48	AC-FT 67010
WTR VR 1977	TOTAL	14075.43	MEAN 38.6	MAX 2720	MIN .00	CFSM .23	IN 3.12	AC-FT 27920

CHARITON RIVER BASIN

06903880 RATHBUN LAKE NEAR RATHBUN, IA

LOCATION.--Lat 40°49'30", long 92°53'33", in NW1/4 NE1/4 sec.35, T.70 N., R.18 W., Appanoose County, Hydrologic Unit 10280201, at control tower of Rathbun Dam, 1.8 mi (2.9 km) north of Rathbun and 3.9 mi (6.3 km) upstream from Walnut Creek and at mile 142.3 (229.0 km).

DRAINAGE AREA.--549 mi² (1,421 km²).

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level.

REMARKS.--Reservoir is formed by earthfill dam completed in 1969. Storage began in November 1969. Release is controlled by two hydraulically controlled slide gates, 6 ft (2 m) wide and 12 ft (4 m) high, into forechamber of an 11-ft (3 m) diameter horseshoe conduit through the dam. No dead storage. Maximum design discharge through gates is 5,000 cfs (142 m³/s). Uncontrolled notch spillway is concrete overflow section 500 ft (152 m) in length, located about 3,000 ft (914 m) west of the right abutment of the dam and provides emergency discharge into the adjacent drainage area of Little Walnut Creek. Uncontrolled notch spillway is at elevation 926 ft (282 m) above mean sea level, contents 552,000 acre-ft (881 hm³). Conservation pool level is at elevation 904.0 ft (275.54 m), contents 205,000 acre-ft (253 hm³). Reservoir is used for flood control, low-flow augmentation, conservation and recreation.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 402,000 acre-ft (496 hm³) May 8-10, 1973; maximum elevation, 918.15 ft (279.852 m) May 9, 1973; minimum daily contents, 100 acre-ft (0.123 hm³) Oct. 1-15, Nov. 17-21, 1969; minimum elevation, 855.40 ft (260.726 m) Oct. 6-10, 1969.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 269,000 acre-ft (332 hm³) Sept. 19, 20; maximum elevation, 909.27 ft (277.145 m) Sept. 20; minimum daily contents, 190,000 acre-ft (234 hm³) Feb. 8-11; minimum elevation, 902.62 ft (275.119 m) Feb. 7-10.

Capacity table (elevation, in feet, and contents, in acre-feet)

860	400	880	33,800	900	164,300
862	850	885	55,730	905	216,500
865	2,390	890	84,530	910	278,500
870	7,950	895	120,000	915	381,000
880	18,100				

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	199000	197000	194000	192000	191000	194000	204000	207000	207000	203000	198000	231000
2	199000	197000	194000	192000	191000	194000	205000	207000	206000	202000	198000	237000
3	198000	197000	194000	192000	191000	194000	208000	207000	206000	202000	198000	240000
4	199000	197000	194000	192000	191000	194000	206000	207000	207000	202000	198000	243000
5	200000	196000	194000	192000	191000	194000	208000	208000	207000	202000	198000	245000
6	200000	196000	194000	192000	191000	194000	208000	208000	207000	201000	199000	246000
7	200000	196000	194000	192000	191000	194000	208000	208000	207000	201000	202000	246000
8	200000	196000	193000	192000	190000	194000	208000	208000	207000	201000	202000	245000
9	200000	195000	193000	192000	190000	194000	208000	208000	206000	202000	204000	245000
10	199000	195000	193000	192000	190000	194000	207000	207000	206000	202000	206000	243000
11	199000	195000	193000	192000	190000	194000	207000	207000	205000	202000	207000	241000
12	199000	195000	193000	192000	191000	195000	207000	207000	206000	202000	208000	241000
13	199000	195000	193000	192000	191000	197000	207000	207000	206000	201000	208000	248000
14	199000	195000	193000	192000	192000	197000	207000	207000	206000	201000	207000	255000
15	199000	195000	193000	192000	192000	198000	206000	207000	205000	201000	207000	257000
16	198000	194000	193000	192000	192000	197000	205000	207000	205000	202000	208000	258000
17	198000	194000	193000	192000	192000	197000	206000	206000	205000	202000	208000	260000
18	198000	194000	193000	192000	192000	198000	206000	206000	205000	202000	208000	269000
19	198000	194000	193000	191000	192000	197000	206000	206000	205000	202000	208000	269000
20	198000	194000	193000	192000	192000	197000	206000	206000	203000	201000	208000	269000
21	198000	194000	193000	191000	192000	197000	207000	206000	204000	201000	208000	268000
22	197000	194000	193000	191000	193000	198000	207000	207000	204000	201000	207000	268000
23	197000	194000	193000	191000	193000	198000	208000	207000	204000	201000	207000	266000
24	198000	194000	192000	191000	193000	198000	208000	207000	204000	201000	207000	266000
25	198000	194000	192000	191000	193000	198000	208000	207000	204000	201000	207000	266000
26	197000	194000	192000	191000	194000	198000	208000	207000	204000	200000	210000	265000
27	197000	194000	192000	191000	194000	198000	208000	207000	203000	199000	221000	264000
28	197000	194000	192000	191000	194000	198000	207000	207000	203000	199000	226000	263000
29	197000	194000	192000	191000	---	202000	207000	207000	203000	199000	229000	262000
30	197000	194000	192000	191000	---	204000	207000	207000	203000	199000	229000	261000
31	197000	---	192000	191000	---	205000	---	207000	---	198000	230000	---
MAX	200000	197000	194000	192000	194000	206000	208000	208000	207000	203000	230000	269000
MIN	197000	194000	192000	191000	190000	194000	204000	206000	203000	198000	198000	231000
+	903.25	902.93	902.78	902.65	902.93	903.95	904.14	904.12	903.77	903.33	905.19	908.61
*	-2,000	-3,000	-2,000	-1,000	+3,000	+11,000	+3,000	0	-4,000	-8,000	+32,000	+30,000
CAL YR 1976.....	MAX 277,000	MIN 183,000	* +7,000									
VTR YR 1977.....	MAX 269,000	MIN 190,000	* +62,000									

+ Elevation, in feet, at end of month
* Change in contents, in acre-feet

CHARITON RIVER BASIN

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06903900 CHARITON RIVER NEAR RATHBUN, IA

LOCATION.--Lat 40°49'22", long 92°53'22", in SE1/4 NE1/4 sec.35, T.70 N., R.18 W., Appanoose County, Hydrologic Unit 10290201, on left bank 800 ft (183 m) downstream from outlet of Rathbun Dam, 1.6 mi (2.9 km) north of Rathbun and 3.7 mi (6.0 km) upstream from Walnut Creek and at mile 142.1 (228.6 km).

DRAINAGE AREA.--549 mi² (1,421 km²).

PERIOD OF RECORD.--October 1955 to current year. Monthly discharge only for some periods, published in WSP 1739.

REVISED RECORDS.--WSP 1680: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 847.92 ft (258.446 m) above mean sea level. Prior to Nov. 16, 1960, nonrecording gage and Nov. 17, 1960, to Sept. 30, 1969, recording gage, at site 3.1 mi (5.0 km) downstream at datum 4.65 ft (1.42 m) lower.

REMARKS.--Records good. Flow regulated by Rathbun Reservoir (station 06903880) since Nov. 21, 1959. Records of discharge include diversion of 10 ft³/s (0.28 m³/s) Oct. 1 to May 17 and 7.0 ft³/s (0.20 m³/s) May 18 to Sept. 30 from reservoir through fish ponds on left bank downstream from dam. Diverted flow returns to stream 0.1 mi (0.2 km) downstream from gage. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

AVERAGE DISCHARGE.--21 years. 295 ft³/s (8.354 m³/s) 7.30 in/yr (185 mm/yr), 213,700 acre-ft/yr (263 hm³/yr); median of yearly mean discharges, 230 ft³/s (6.51 m³/s) 6.7 in/yr (145 mm/yr), 167,000 acre-ft/yr (206 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,800 ft³/s (617 m³/s) Mar. 31, 1960, gage height, 25.3 ft (7.71 m), from floodmark, site and datum then in use; minimum daily, 0.1 ft³/s (0.003 m³/s) Oct. 12-14, 17-24, 1957, Oct. 11, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 803 ft³/s (22.7 m³/s) Aug. 30; maximum gage height, 10.68 ft (3.225 m) Sept. 13, backwater from Walnut Creek; minimum daily, 14 ft³/s (0.398 m³/s) Nov. 12-16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	16	16	16	17	18	19	20	19	18	17	19
2	15	16	16	16	17	18	17	20	19	18	17	19
3	15	87	16	16	18	18	17	20	19	18	17	19
4	16	72	16	16	18	18	62	20	19	17	18	19
5	16	18	16	16	18	17	98	20	19	17	17	18
6	16	18	16	16	18	17	99	20	19	17	19	18
7	16	18	16	17	18	17	99	20	20	17	19	467
8	16	18	16	17	17	17	99	20	19	19	19	507
9	16	17	16	17	17	18	99	20	20	19	18	507
10	16	16	16	17	19	17	100	20	21	19	17	615
11	16	15	16	17	20	18	99	20	21	18	18	613
12	16	14	16	17	18	18	96	19	22	17	17	116
13	17	14	16	18	18	16	96	20	22	17	17	18
14	17	14	16	18	18	17	96	21	22	19	17	18
15	17	14	16	18	18	16	96	21	18	19	17	18
16	17	14	16	18	19	17	96	21	19	18	17	18
17	18	17	16	18	19	18	96	21	19	17	17	18
18	17	18	16	18	18	17	103	18	19	17	17	18
19	18	18	16	18	18	18	44	18	18	17	17	144
20	17	18	16	18	18	17	19	18	17	17	17	508
21	17	17	16	18	18	18	20	18	18	16	17	509
22	17	17	16	18	17	18	20	18	18	16	17	511
23	17	17	16	18	19	17	20	18	18	16	16	612
24	17	17	16	18	18	17	20	18	17	16	16	516
25	17	16	16	18	18	17	20	18	17	16	17	513
26	17	17	16	18	18	17	20	18	17	17	17	512
27	16	16	16	18	18	18	20	18	17	17	18	511
28	16	16	16	20	18	22	20	19	17	17	18	508
29	16	16	16	19	---	18	20	19	18	17	18	508
30	16	16	16	17	---	17	20	19	17	17	725	325
31	16	---	16	17	---	17	---	18	---	17	23	---
TOTAL	509	617	496	541	505	543	1749	598	563	537	1252	8419
MEAN	16.4	20.6	16.0	17.5	18.0	17.5	59.3	19.3	18.8	17.3	40.4	281
MAX	18	87	16	20	20	22	103	21	22	19	725	516
MIN	15	14	16	16	17	16	17	18	16	16	16	18
AC-FT	1010	1220	984	1070	1000	1000	3470	1190	1120	1070	2480	16700

CAL YR 1976 TOTAL 92036 MEAN 251 MAX 1190 MIN 12 AC-FT 182600
WTR YR 1977 TOTAL 16328 MEAN 44.7 MAX 725 MIN 14 AC-FT 32390

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or floodflow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to these events. These measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at partial-record stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. Discharge measurements made at miscellaneous sites for both low flow and high flow are given in a third or fourth table.

Low-flow partial-record stations

Measurements of streamflow in the area covered by this report made at low-flow partial-record stations are given in the following table. These measurements were made during periods of base flow when streamflow is primarily from ground-water storage. These measurements, when correlated with the simultaneous discharge of a nearby stream where continuous records are available, will give a picture of the low-flow potentiality of a stream. The column headed "Period of record" shows the period in which measurements were made for most water years at the same, or practically the same, site.

DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	MEASUREMENTS DATE	DISCHARGE (CFS)
UPPER IOWA RIVER BASIN						
06307300	UPPER IOWA R AT CHESTER, IOWA.	LAT 4330XX, LONG 9222XX, IN SE 1/4 SEC. 10, T.100 N., R.13 W., HOWARD COUNTY, AT BRIDGE AT NORTH CITY LIMITS OF CHESTER.	141	1957-	07-13-77	6.3
06307400	UPPER IOWA R NR KENDALVILLE, IOWA.	LAT 4320XX, LONG 9202XX, NEAR CENTER OF SEC.21, T.100 N., R.10 W., WINNESHIEK COUNTY, AT BRIDGE, 1 MILE NORTH OF KENDALVILLE.	273	1957-	07-13-77	20
06308100	CANOE CR NR DECORAH, IOWA	LAT 4321XX, LONG 9141XX, IN NE 1/4 SEC. 33, T.99 N., R.7 W., WINNESHIEK COUNTY, AT BRIDGE, 7 MILES NORTHEAST OF DECORAH.	50.9	1957-	07-14-77	7.6
06308300	BEAR CR NR HIGHLANDVILLE, IOWA.	LAT 4327XX, LONG 9137XX, IN SE 1/4 SEC. 25, T.100 N., R.7 W., WINNESHIEK COUNTY, AT BRIDGE, 3 MILES EAST OF HIGHLANDVILLE.	53.4	1957-	07-14-77	20
VILLAGE CREEK BASIN						
06308350	VILLAGE CR AT VILLAGE CREEK, IOWA.	LAT 4319XX, LONG 9114XX, IN NW 1/4 SEC. 18, T.98 N., R.3 W., ALLAMAKEE COUNTY, AT BRIDGE IN VILLAGE CREEK.	58.5	1957-	07-14-77	23
PAINT CREEK BASIN						
06308800	PAINT CR AT WATERVILLE, IOWA.	LAT 431237, LONG 911021, IN NW 1/4 SEC. 22, T.97 N., R.4 W., ALLAMAKEE COUNTY, AT BRIDGE 0.5 MILE NORTHWEST OF WATERVILLE.	42.8	*1952-73. 1974-	07-14-77	4.9
YELLOW RIVER BASIN						
06309000	YELLOW R AT MYRON, IOWA.	LAT 4310XX, LONG 9132XX, IN NE 1/4 SEC. 3, T.98 N., R.6 W., ALLAMAKEE COUNTY, AT BRIDGE, 0.6 MILE SOUTH OF MYRON.	59.5	1957-	07-14-77	6.1
06309000	YELLOW R AT ION, IOWA.	LAT 4307XX, LONG 9115XX, IN SW 1/4 SEC. 24, T.98 N., R.4 W., ALLAMAKEE COUNTY, AT BRIDGE, 7.5 MILES NORTHWEST OF MCGREGOR.	221	*1934-51. 1957-	07-14-77	32
TURKEY RIVER BASIN						
06411000	NB TURKEY R NR VERNON SPRINGS, IOWA.	LAT 4321XX, LONG 9211XX, IN SW 1/4 SEC. 31, T.99 N., R.11 W., HOWARD COUNTY, AT BRIDGE, 3 MILES WEST OF VERNON SPRINGS.	40.1	1957-	07-13-77	1.9
06411600	TURKEY R NR VERNON SPRINGS, IOWA	LAT 4320XX, LONG 9207XX, IN NW 1/4 SEC. 2, T.98 N., R.11 W., HOWARD COUNTY, AT BRIDGE, 2.5 MILES SOUTH OF VERNON SPRINGS.	87.0	1957-	07-13-77	4.0
06411600	TURKEY R AT SPILLVILLE, IOWA.	LAT 431228, LONG 915656, IN NE 1/4 SEC. 19, T.97 N., R.9 W., WINNESHIEK COUNTY, AT BRIDGE AT NORTH EDGE OF SPILLVILLE.	177	*1956-73. 1974-	07-13-77	16

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	MEASUREMENTS DATE	DISCHARGE (CFS)
TURKEY RIVER BASIN--CONTINUED						
05411620	L TURKEY R NR MAUCOMA, IOWA.	LAT 4301XX, LONG 9159XX, IN NW 1/4 SEC. 25, T.95 N., R.10 W., FAYETTE COUNTY, AT BRIDGE, 4 MILES SOUTHEAST OF MAUCOMA.	102.0	1957-	07-13-77	9.1
05411700	*CRANE CR NR LOURDES, IOWA.	LAT 4318XX, LONG 9219XX, IN NW 1/4 SEC. 8, T.97 N., R.12 W., HOWARD COUNTY, AT BRIDGE ON STATE HIGHWAY 272, 1 MILE SOUTHWEST OF LOURDES.	78.8	1957-	07-13-77	1.6
05411800	L TURKEY R NR ALPHA, IOWA.	LAT 4301XX, LONG 9157XX, IN SW 1/4 SEC. 30, T.95 N., R.9 W., FAYETTE COUNTY, AT BRIDGE, 3 MILES NORTHEAST OF ALPHA.	319	1957-	07-13-77	26
05412100	ROBERTS CR NR ST. OLAF, IOWA.	LAT 425849, LONG 912303, IN NW 1/4 SEC. 25, T.94 N., R.5 W., CLAYTON COUNTY, AT BRIDGE NEAR NORTH CITY LIMITS OF ST. OLAF.	70.7	1957-	07-13-77	8.3
05412150	ROBERTS CR AT ST. OLAF, IOWA.	LAT 425842, LONG 912301, IN SW 1/4 SEC. 25, T.94 N., R.5 W., CLAYTON COUNTY, AT BRIDGE NEAR EAST CITY LIMITS OF ST. OLAF.	101	1957-	07-13-77	9.1
05412200	VOLGA R NR FAYETTE, IOWA.	LAT 4249XX, LONG 9153XX, IN SW 1/4 SEC. 35, T.93 N., R.9 W., FAYETTE COUNTY, AT BRIDGE, 4.5 MILES SOUTHWEST OF FAYETTE.	53.0	1957-	07-12-77	4.3
05412300	L VOLGA R NR FAYETTE, IOWA.	LAT 4249XX, LONG 9153XX, NEAR S 1/4 CORNER OF SEC.35, T.93 N., R.9 W., FAYETTE COUNTY, AT BRIDGE, 4 MILES SOUTHWEST OF FAYETTE.	31.0	1957-	07-12-77	2
05412400	VOLGA R AT LITTLE-PORT, IOWA.	LAT 424514, LONG 912208, IN SE 1/4 SEC. 25, T.92 N., R.5 W., CLAYTON COUNTY, AT BRIDGE IN LITTLEPORT.	348	1957-	07-12-77	82
LITTLE MAQUOKETA RIVER BASIN						
05414450	*HF LITTLE MAQUOKETA NEAR RICKARDSVILLE, IOWA.	LAT 423609, LONG 905120, NEAR NW CORNER SEC. 28, T.90 N., R.1 E., DUBUQUE COUNTY, AT BRIDGE, 1 MILE NORTHEAST OF RICKARDSVILLE.	21.6	1957-	07-13-77	.04
MAQUOKETA RIVER BASIN						
05416300	MAQUOKETA R NR DUNDEE, IOWA.	LAT 423655, LONG 913344, IN SW 1/4 SEC. 9, T.90 N., R.6 W., DELAWARE COUNTY, AT BRIDGE, 2.5 MILES NORTH OF DUNDEE.	61.1	1957-	07-13-77	8.6
05416400	SF MAQUOKETA R NR DUNDEE, IOWA.	LAT 423608, LONG 913513, IN SW 1/4 SEC. 17, T.90 N., R.6 W., DELAWARE COUNTY, AT BRIDGE, 2.5 MILES NORTHWEST OF DUNDEE.	54.8	1957-	07-13-77	1.6
05417000	MAQUOKETA RIVER NR MANCHESTER, IOWA	LAT 422722, LONG 912556, IN NW 1/4 SEC. 9, T.88 N., R.5 W., DELAWARE COUNTY, 2.3 MILES SOUTHEAST OF MANCHESTER	305	1933-73. 1977-	07-13-77	30
05417540	PLUM CR NR EARLVILLE, IOWA.	LAT 422604, LONG 911358, IN NE 1/4 SEC. 19, T.88 N., R.3 W., DELAWARE COUNTY, AT BRIDGE, 4 MILES SOUTHEAST OF EARLVILLE.	65.7	1957-	07-13-77	5.8
05417550	MAQUOKETA R NR HOPKINTON, IOWA.	LAT 4222XX, LONG 9116XX, IN NE 1/4 SEC. 11, T.87 N., R.4 W., DELAWARE COUNTY, AT BRIDGE, 2 MILES NORTHWEST OF HOPKINTON.	454	1957-	07-13-77	55
05417580	BUCK CR NR HOPKINTON, IOWA.	LAT 4221XX, LONG 9117XX, IN SE 1/4 SEC. 10, T.87 N., R.4 W., DELAWARE COUNTY, AT BRIDGE, 2.5 MILES NORTHWEST OF HOPKINTON.	50.7	1957-	07-13-77	3.1
05417600	MAQUOKETA R NR SCOTCH GROVE, IOWA.	LAT 4212XX, LONG 9101XX, NEAR CENTER OF SEC.8, T.85 N., R.1 W., JONES COUNTY, AT BRIDGE ON STATE HIGHWAY 136, 6 MILES NORTHEAST OF SCOTCH GROVE.	704	1957-	07-12-77	85
05417700	BEAR CREEK NR MONMOUTH, IOWA.	LAT 420218, LONG 905259, IN NE 1/4 SE 1/4 SEC. 31, T.84 N., R.1 E., JACKSON COUNTY, AT BRIDGE, 2.6 MILES SOUTH OF MONMOUTH.	61.3	1957-	07-12-77	5.5

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	MEASUREMENTS DATE	DISCHARGE (CFS)
MAQUOKETA RIVER BASIN--CONTINUED						
05418100	NF MAQUOKETA R AT DYERSVILLE, IOWA.	LAT 422905, LONG 910726, IN NW 1/4 SEC. 31, T.89 N., R.2 W., DUBUQUE COUNTY, AT BRIDGE, IN DYERSVILLE.	80.2	1957-	07-13-77	6.7
05418200	WHITEWATER CR AT FILLMORE, IOWA.	LAT 421907, LONG 905526, IN NE 1/4 SEC. 26, T.87 N., R.1 W., DUBUQUE COUNTY, AT BRIDGE ON U.S. HIGHWAY 161, 0.5 MILE WEST OF FILLMORE.	91.9	1957-	07-13-77	8.6
05418300	LYTLE CR NR BERNARD, IOWA.	LAT 421757, LONG 904656, IN SE 1/4 SEC. 38, T.87 N., R.1 E., DUBUQUE COUNTY, AT BRIDGE, 2.5 MILES SOUTHEAST OF BERNARD.	62.7	1957-	07-13-77	7.9
05418350	LYTLE CR NR FULTON, IOWA.	LAT 4212XX, LONG 9045XX, NEAR CENTER OF SEC. 5, T.85 N., R.2 E., JACKSON COUNTY, AT BRIDGE, 5 MILES NORTHWEST OF FULTON.	114	1957-	07-12-77	20
05418400	NF MAQUOKETA R NR FULTON, IOWA. (DISCONTINUED)	LAT 4211XX, LONG 9044XX, IN SE 1/4 SEC. 9, T.85 N., R.2 E., JACKSON COUNTY, AT BRIDGE, 3 MILES NORTHWEST OF FULTON.	499	1957-	07-12-77	79
05418650	DEEP CR NR CHARLOTTE, IOWA.	LAT 4200XX, LONG 9024XX, NEAR CENTER OF SEC. 17, T.83 N., R.5 E., CLINTON COUNTY, AT BRIDGE, 4 MILES NORTHEAST OF CHARLOTTE.	67.7	1957-	07-12-77	2.4
05418700	DEEP CR NR PRESTON, IOWA.	LAT 4203XX, LONG 9026XX, NEAR N 1/4 CORNER OF SEC. 31, T.84 N., R.5 E., JACKSON COUNTY, AT BRIDGE, 2 MILES WEST OF PRESTON.	91.9	1957-	07-12-77	3.4
ELK RIVER BASIN						
05420300	ELK R NR ALMONT, IOWA.	LAT 420039, LONG 901206, NEAR CENTER OF SEC. 12, T.83 N., R.6 E., CLINTON COUNTY, AT BRIDGE, 2.5 MILES NORTH OF ALMONT.	55.9	1957-	07-12-77	4.4
WAPSIPINICON RIVER BASIN						
05420540	WAPSIPINICON R NR RICEVILLE, IOWA.	LAT 4320XX, LONG 9234XX, IN NE 1/4 SEC. 12, T.98 N., R.15 W., MITCHELL COUNTY, AT BRIDGE, 2.5 MILES SOUTH OF RICEVILLE.	72.3	1957-	07-13-77	6.7
05420580	WAPSIPINICON R NR IONIA, IOWA.	LAT 4301XX, LONG 9223XX, IN NW 1/4 SEC. 33, T.95 N., R.13 W., CHICKASAW COUNTY, AT BRIDGE, 4 MILES SOUTHEAST OF IONIA.	161	1957-	07-13-77	7.4
05420640	*LITTLE WAPSIPINICON R AT ELMA, IOWA.	LAT 4314XX, LONG 9227XX, IN NW 1/4 SEC. 12, T.97 N., R.14 W., HOWARD COUNTY, AT BRIDGE ON COUNTY ROAD A NEAR WEST CITY LIMITS OF ELMA.	37.3	1957-	07-13-77	2.3
05420660	WAPSIPINICON R NR NEW HAMPTON, IOWA.	LAT 4259XX, LONG 9222XX, IN NW 1/4 SEC. 10, T.94 N., R.13 W., CHICKASAW COUNTY, AT BRIDGE, 5 MILES SOUTHWEST OF NEW HAMPTON.	291	1957-	07-13-77	12
05420680	WAPSIPINICON R NR TRIPOLI, IOWA.	LAT 4250XX, LONG 9215XX, IN SW 1/4 SEC. 27, T.93 N., R.12 W., BREMER COUNTY, AT BRIDGE ON STATE HIGHWAY 93, 2 MILES NORTH OF TRIPOLI.	343	1957-	07-14-77	15
05420700	EF WAPSIPINICON R NR FREDERICKSBURG, IOWA.	LAT 4301XX, LONG 9213XX, IN NW 1/4 SEC. 36, T.95 N., R.12 W., CHICKASAW COUNTY, AT BRIDGE, 3 MILES NORTH OF FREDERICKSBURG.	62.2	1957-	07-13-77	2.6
05420720	EF WAPSIPINICON R NR TRIPOLI, IOWA.	LAT 4251XX, LONG 9214XX, IN NW 1/4 SEC. 26, T.93 N., R.12 W., BREMER COUNTY, AT BRIDGE ON STATE HIGHWAY 93, 3 MILES NORTH OF TRIPOLI.	144	1957-	07-13-77	6.5
05420740	WAPSIPINICON R AT TRIPOLI, IOWA.	LAT 4248XX, LONG 9214XX, IN SW 1/4 SEC. 2, T.92 N., R.12 W., BREMER COUNTY, AT BRIDGE, 1.5 MILES EAST OF TRIPOLI.	498	1957-	07-13-77	18

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES
DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

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STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	MEASUREMENTS DATE	DISCHARGE (CFS)
WAPSIPINICON RIVER BASIN--CONTINUED						
05420800	CRANE CR NR DENVER, IOWA.	LAT 423032, LONG 921521, IN NW 1/4 SEC. 3, T.90 N., R.12 W., BLACK HAWK COUNTY, AT BRIDGE, 5 MILES SOUTHEAST OF DENVER.	63.6	1957-	07-14-77	3.0
05420820	CRANE CR AT DUNKERTON, IOWA.	LAT 4234XX, LONG 9210XX, IN SW 1/4 SEC. 29, T.90 N., R.11 W., BLACK HAWK COUNTY, AT BRIDGE, NEAR WEST CITY LIMITS OF DUNKERTON.	101	1957-	07-12-77	3.1
05420840	L WAPSIPINICON R NR WESTGATE, IOWA.	LAT 4247XX, LONG 9205XX, IN NE 1/4 SEC. 13, T.92 N., R.11 W., BREMER COUNTY, AT BRIDGE, 4.5 MILES NORTHWEST OF WESTGATE.	57.4	1957-	07-12-77	5.6
05420860	BUCK CR NR LITTLETON, IOWA.	LAT 4235XX, LONG 9203XX, NEAR CENTER OF SEC.29, T.90 N., R.10 W., BUCHANAN COUNTY, AT BRIDGE, 3 MILES NORTHWEST OF LITTLETON.	57.0	1957-	07-14-77	.35
05420900	L WAPSIPINICON R AT LITTLETON, IOWA.	LAT 4233XX, LONG 9202XX, IN NE CORNER SEC.9, T.89 N., R.10 W., BUCHANAN COUNTY, AT BRIDGE, 0.5 MILE NORTH OF LITTLETON.	205	1957-	07-14-77	14
05420940	OTTER CR NR OTTERVILLE, IOWA.	LAT 4233XX, LONG 9157XX, NEAR SW CORNER OF SEC.5, T.89 N., R.9 W., BUCHANAN COUNTY, AT BRIDGE, 2 MILES NORTH OF OTTERVILLE.	101	1957-	07-14-77	4.9
05421500	WAPSIPINICON R AT STONE CITY, IOWA.	LAT 4207XX, LONG 9121XX, IN NE 1/4 SEC. 6, T.84 N., R.4 W., JONES COUNTY, AT BRIDGE, IN STONE CITY.	1324	* 1903-14. 1957-	07-12-77	54
05421650*	BUFFALO CR ABOVE WINTHROP, IOWA.	LAT 4230XX, LONG 9144XX, NEAR NE CORNER SEC. 25, T.89 N., R. 8 W., BUCHANAN COUNTY, AT BRIDGE, 1.5 MILES NORTH-EAST OF WINTHROP.	68.2	1957-	07-14-77	.71
05421700	BUFFALO CR NR STONE CITY, IOWA.	LAT 4208XX, LONG 9121XX, NEAR E 1/4 CORNER SEC.30, T.85 N., R.4 W., JONES COUNTY, AT BRIDGE, 2 MILES NORTH OF STONE CITY.	217	1957-	07-12-77	6.5
05421800	YANKEE RUN AT WHEATLAND, IOWA.	LAT 414934, LONG 905025, IN NE 1/4 SEC. 16, T.81 N., R.1 E., CLINTON COUNTY, AT BRIDGE, NEAR SOUTH CITY LIMITS OF WHEATLAND.	52.2	1957-	07-12-77	4.0
05421850	MUD CR NR PLAINVIEW, IOWA.	LAT 414202, LONG 904526, IN SV 1/4 SEC. 29, T.80 N., R.2 E., SCOTT COUNTY, AT BRIDGE, 2.5 MILES NORTHEAST OF PLAINVIEW.	109	1957-	07-12-77	12
05421900	SILVER CR NR DE WITT, IOWA.	LAT 414709, LONG 903313, IN SE 1/4 SEC. 25, T.81 N., R.3 E., CLINTON COUNTY, AT BRIDGE, 2.5 MILES SOUTH OF DE WITT.	60.8	1957-	07-12-77	5.2
05422100	BROPHYS CR NR LOW MOOR, IOWA.	LAT 414856, LONG 902414, NEAR N 1/4 CORNER SEC.20, T.81 N., R.5 E., CLINTON COUNTY, AT BRIDGE, ON U. S. HIGHWAY 30, 3 MILES NW OF LOW MOOR.	72.8	1957-	07-12-77	5.4
FLINT RIVER BASIN						
05469700	FLINT R NR BURLINGTON, IOWA.	LAT 405200, LONG 911203, IN NE 1/4 SEC. 16, T.70 N., R.3 W., DES MOINES COUNTY, AT BRIDGE, 6 MILES NW OF BURLINGTON.	107	1958-	07-13-77	.04
SKUNK RIVER BASIN						
05469800	S SKUNK R NR ELLSWORTH, IOWA.	LAT 4219XX, LONG 9335XX, NEAR N 1/4 CORNER OF SEC.36, T.87 N., R.24 W., HAMILTON COUNTY, AT BRIDGE ON STATE HIGHWAY 175, NEAR WEST CITY LIMITS OF ELLSWORTH.	54.9	1957-	07-11-77	.04
05469850	MUD LAKE DRAINAGE DITCH 71 AT JEWELL, IOWA.	LAT 4219XX, LONG 9338XX, IN NW 1/4 SEC. 28, T.87 N., R.24 W., HAMILTON COUNTY, AT BRIDGE, 1 MILE NORTH OF JEWELL.	64.1	1957-	07-11-77	.17
05469950	S SKUNK R AT RANDALL, IOWA.	LAT 4214XX, LONG 9335XX, IN NE 1/4 SEC. 25, T.86 N., R.24 W., HAMILTON COUNTY, AT BRIDGE, 1 MILE EAST OF RANDALL.	160	1957-	07-11-77	.42

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	MEASUREMENTS DATE	DISCHARGE (CFS)
SKUNK RIVER BASIN--CONTINUED						
08470200	SQUAW CR NR STANHOPE, IOWA.	LAT 421234, LONG 934707, NEAR N 1/4 CORNER OF SEC. 5, T. 86 N., R. 26 W., BOONE COUNTY, AT BRIDGE, 6 MILES SOUTH OF STANHOPE.	62.6	1957-	07-11-77	0
08471050	S SKUNK R AT COLFAX, IOWA.	LAT 414055, LONG 931447, IN NW 1/4 SEC. 1, T. 79 N., R. 21 W., JASPER COUNTY, AT BRIDGE ON STATE HIGHWAY 117, AT NORTH CITY LIMITS OF COLFAX.	803	1957-	07-11-77	8.7
08471100	EB INDIAN CR NR NEVADA, IOWA.	LAT 4102XX, LONG 9322XX, NEAR N 1/4 CORNER OF SEC. 2, T. 83 N., R. 22 W., STORY COUNTY, AT BRIDGE, 4 MILES NE OF NEVADA.	65.7	1957-	07-11-77	0
08471150	WB INDIAN CR NR IOWA CENTER, IOWA.	LAT 4155XX, LONG 9326XX, IN NW 1/4 SEC. 8, T. 82 N., R. 22 W., STORY COUNTY, AT BRIDGE, 2 MILES NW OF IOWA CENTER.	65.9	1957-	07-11-77	0
08471180	INDIAN CR NR IOWA CENTER, IOWA.	LAT 4155XX, LONG 9325XX, NEAR CENTER OF SEC. 16, T. 82 N., R. 22 W., STORY COUNTY, AT BRIDGE, 1 MILE SW OF IOWA CENTER.	203	1957-	07-11-77	0
08471200	INDIAN CR NR MINGO, IOWA.	LAT 414817, LONG 931026, IN NW 1/4 SEC. 28, T. 81 N., R. 21 W., JASPER COUNTY, AT BRIDGE 2.9 MILES NORTHWEST OF MINGO.	276	* 1958-74, 1975-	07-11-77	.84
08471350	CLEAR CR NR MINGO, IOWA.	LAT 4147XX, LONG 9316XX, IN SW 1/4 SEC. 35, T. 81 N., R. 21 W., JASPER COUNTY, AT BRIDGE, 1 MILE NE OF MINGO.	84.1	1957-	07-11-77	0
08471400	ELK CR NR TAINTOR, IOWA.	LAT 4129XX, LONG 9251XX, IN NE 1/4 SEC. 7, T. 77 N., R. 17 W., MAHASKA COUNTY, AT BRIDGE, 6 MILES SW OF TAINTOR.	59.9	1957-	07-11-77	.98
08472100	N SKUNK R NR NEWTON, IOWA.	LAT 4147XX, LONG 9302XX, IN NW 1/4 SEC. 35, T. 81 N., R. 19 W., JASPER COUNTY, AT BRIDGE, 6 MILES NORTH OF NEWTON.	101	1957-	07-11-77	.10
08472300	N SKUNK R NR SEARSBORO, IOWA.	LAT 4132XX, LONG 9242XX, NEAR CENTER OF SEC. 27, T. 78 N., R. 16 W., POWESHIEK COUNTY, AT BRIDGE, 3.5 MILES SOUTH OF SEARSBORO.	358	1957-	07-11-77	2.8
08472400	MIDDLE CR NR ROSE HILL, IOWA.	LAT 412042, LONG 922925, IN NE 1/4 SEC. 33, T. 78 N., R. 14 W., MAHASKA COUNTY, AT BRIDGE, 2 MILES NW OF ROSE HILL.	58.5	1957-	07-11-77	0
08472450	CEDAR CR NR SIGOURNEY, IOWA.	LAT 411842, LONG 921333, IN SE 1/4 SEC. 10, T. 75 N., R. 12 W., KEOKUK COUNTY, AT BRIDGE, 2 MILES SW OF SIGOURNEY.	92.6	1957-	07-11-77	.01
08473000	SKUNK R AT COPPOCK, IOWA.	LAT 4110XX, LONG 9143XX, IN NE 1/4 SEC. 1, T. 73 N., R. 8 W., JEFFERSON COUNTY, AT BRIDGE ON STATE HIGHWAY 78, 0.5 MILE WEST OF COPPOCK.	2916	* 1913-44, 1957-	07-11-77	49
08473020	EF CROOKED CR NR WINFIELD, IOWA.	LAT 4109XX, LONG 9126XX, IN NE 1/4 SEC. 9, T. 73 N., R. 8 W., HENRY COUNTY, AT BRIDGE, 2 MILES NORTH OF WINFIELD.	69.3	1958-	07-11-77	.06
08473050	CROOKED CR NR COPPOCK, IOWA.	LAT 4112XX, LONG 9142XX, IN NE 1/4 SEC. 30, T. 74 N., R. 7 W., WASHINGTON COUNTY, AT BRIDGE, 2 MILES NE OF COPPOCK.	259	1957-	07-11-77	.92
08473100	WALNUT CR AT GERMANVILLE, IOWA.	LAT 4105XX, LONG 9146XX, IN SW 1/4 SEC. 27, T. 73 N., R. 8 W., WASHINGTON COUNTY, AT BRIDGE, 1 MILE WEST OF GERMANVILLE.	66.3	1957-	07-11-77	.03
08473200	CEDAR CR NR HIGHLAND CENTER, IOWA.	LAT 410630, LONG 922159, IN SW 1/4 SEC. 21, T. 73 N., R. 13 W., WAPELLO COUNTY, AT BRIDGE, 1 MILE SW OF HIGHLAND CENTER.	73.6	1957-	07-11-77	.01
08473250	COMPETINE CR BELOW FORKS NR BATAVIA, IOWA.	LAT 4102XX, LONG 9207XX, IN NE 1/4 SEC. 21, T. 72 N., R. 11 W., JEFFERSON COUNTY, AT BRIDGE, 3 MILES NE OF BATAVIA.	68.8	1957-	07-11-77	.01

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DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	MEASUREMENTS DATE	DISCHARGE (CFS)
SKUNK RIVER BASIN--CONTINUED						
05473300*	CEDAR CR NR BATAVIA, IOWA.	LAT 4101XX, LONG 9207XX, IN NW 1/4 SEC. 27, T.72 N., R.11 W., JEFFERSON COUNTY, AT BRIDGE ON U.S. HIGHWAY 30, 2.6 MILES NE OF BATAVIA.	252	1957-	07-11-77	.14
05473350	L CEDAR CR NR SALEM, IOWA.	LAT 4051XX, LONG 9141XX, IN SW 1/4 SEC. 17, T.70 N., R.7 W., HENRY COUNTY, AT BRIDGE, 4 MILES WEST OF SALEM.	55.0	1958-	07-11-77	0
05473400	CEDAR CR NR OAKLAND HILLS, IOWA.	LAT 4055XX, LONG 9140XX, IN NW 1/4 SEC. 28, T.71 N., R.7 W., HENRY COUNTY, AT BRIDGE, 3 MILES WEST OF OAKLAND HILLS.	522	1958-	07-11-77	14
05473450	BIG CR AT MT. PLEASANT, IOWA.	LAT 4100XX, LONG 9132XX, IN NW 1/4 SEC. 34, T.72 N., R.6 W., HENRY COUNTY, AT BRIDGE, 3 MILES NE OF MT. PLEASANT.	58.0	1958-	07-11-77	.02
DEVILS CREEK BASIN						
05474190	DEVILS CR NR VIELE, IOWA.	LAT 402703, LONG 912534, IN SW 1/4 SEC. 18, T.67 N., R.5 W., LEE COUNTY, AT BRIDGE, 1 MILE NE OF VIELE.	20.0	1958-	07-13-77	0
05474200	SUGAR CR NR FRANKLIN, IOWA.	LAT 403954, LONG 912839, IN NE 1/4 SEC. 30, T.68 N., R.5 W., LEE COUNTY, AT BRIDGE, 2 MILES EAST OF FRANKLIN.	75.6	1958-	07-13-77	0
05474300	SUGAR CR NR VIELE, IOWA.	LAT 403639, LONG 912624, IN SE 1/4 SEC. 9, T.67 N., R.5 W., LEE COUNTY, AT BRIDGE, 0.5 MILE WEST OF VIELE.	109	1958-	07-13-77	.08
DES MOINES RIVER BASIN						
05481900	BEAVER CR AT GRANGER, IOWA.	LAT 414529, LONG 935101, IN SW 1/4 SEC. 2, T.80 N., R.25 W., DALLAS COUNTY, AT BRIDGE, 1.5 MILES WEST OF GRANGER.	314	1957-	07-06-77	0
05482100	N RACCOON R NR REMBRANDT, IOWA.	LAT 4247XX, LONG 9505XX, IN NE 1/4 SEC. 21, T.92 N., R.36 W., BUENA VISTA COUNTY, AT BRIDGE, 5 MILES SE OF REMBRANDT.	77.4	1957-	07-05-77	1.9
05482120	N RACCOON R NR TRUESDALE, IOWA.	LAT 4242XX, LONG 9505XX, IN NE 1/4 SEC. 15, T.91 N., R.35 W., BUENA VISTA COUNTY, AT BRIDGE, 6 MILES SE OF TRUESDALE.	164	1957-	07-05-77	2.4
05482180	L CEDAR CR NR FONDA, IOWA.	LAT 4227XX, LONG 9451XX, IN NW 1/4 SEC. 15, T.90 N., R.34 W., POCAHONTAS COUNTY, AT BRIDGE, 2 MILES NORTH OF FONDA.	83.5	1957-	07-05-77	0
05482200	B CEDAR CR AT FONDA, IOWA.	LAT 4235XX, LONG 9451XX, IN SW 1/4 SEC. 22, T.90 N., R.34 W., POCAHONTAS COUNTY, AT BRIDGE ON STATE HIGHWAY 8, AT NORTH CITY LIMITS OF FONDA.	196	1957-	07-05-77	0
05482220	B CEDAR CR AT SAC CITY, IOWA.	LAT 4224XX, LONG 9459XX, IN SE 1/4 SEC. 25, T.88 N., R.36 W., SAC COUNTY, AT BRIDGE, 1 MILE SE OF SAC CITY.	342	1957-	07-06-77	.47
05482320	INDIAN CR NR LAKE VIEW, IOWA.	LAT 4220XX, LONG 9500XX, IN NW 1/4 SEC. 24, T.87 N., R.35 W., SAC COUNTY, AT BRIDGE, 4 MILES NE OF LAKE VIEW.	90.2	1957-	07-06-77	1.4
05482360	CAMP CR NR LYTTON, IOWA.	LAT 4223XX, LONG 9450XX, IN NW 1/4 SEC. 5, T.87 N., R.34 W., CALHOUN COUNTY, AT BRIDGE, 3 MILES SE OF LYTTON.	62.0	1957-	07-06-77	0
05482380	CAMP CR NR LAKE CITY, IOWA.	LAT 4217XX, LONG 9450XX, IN NW 1/4 SEC. 5, T.85 N., R.34 W., CALHOUN COUNTY, AT BRIDGE, 5 MILES NW OF LAKE CITY.	147	1957-	07-06-77	0
05482400	N RACCOON R NR LAKE CITY, IOWA.	LAT 4216XX, LONG 9450XX, NEAR E 1/4 CORNER SEC.17, T.86 N., R.34 W., CALHOUN COUNTY, AT BRIDGE ON STATE HIGHWAY 175, 4 MILES WEST OF LAKE CITY.	1003	1987-	07-06-77	9.1
05482410	LAKE CR NR ROCKWELL CITY, IOWA.	LAT 4224XX, LONG 9436XX, IN SW 1/4 SEC. 29, T.88 N., R.32 W., CALHOUN COUNTY, AT BRIDGE ON U.S. HIGHWAY 20, 1 MILE EAST OF ROCKWELL CITY.	71.5	1957-	07-05-77	.05

DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	MEASUREMENTS DATE	DISCHARGE (CFS)
DES MOINES RIVER BASIN--CONTINUED						
05402420	LAKE CR NR LAKE CITY, IOWA.	LAT 4210XX, LONG 9447XX, IN SW 1/4 SEC. 14, T.86 N., R.34 W., CALHOUN COUNTY, AT BRIDGE, 3 MILES WEST OF LAKE CITY.	128	1957-	07-06-77	0
05402440	PURGATORY CR NR LANESSBORO, IOWA.	LAT 4210XX, LONG 9438XX, IN NE 1/4 SEC. 24, T.86 N., R.33 W., CARROLL COUNTY, AT BRIDGE, 3 MILES SE OF LANESSBORO.	66.6	1957-	07-06-77	0
05402460	E CEDAR CR NR SOMERS, IOWA.	LAT 422207, LONG 942703, IN NW 1/4 SEC. 10, T.87 N., R.31 W., CALHOUN COUNTY, AT BRIDGE, 1 MILE SW OF SOMERS.	62.4	1957-	07-06-77	0
05402480	CEDAR CR NR CHURDAN, IOWA.	LAT 4208XX, LONG 9438XX, NEAR S 1/4 CORNER SEC.28, T.85 N., R.32 W., GREENE COUNTY, AT BRIDGE, 8 MILES SW OF CHURDAN.	151	1957-	07-06-77	0
05402700	HARDIN CR NR CHURDAN, IOWA.	LAT 4210XX, LONG 9426XX, IN SW 1/4 SEC. 14, T.86 N., R.31 W., GREENE COUNTY, AT BRIDGE, 2 MILES EAST OF CHURDAN.	74.0	1957-	07-06-77	0
05403060	HARDIN CR NR JEFFERSON, IOWA.	LAT 4201XX, LONG 9420XX, IN NW 1/4 SEC. 10, T.83 N., R.30 W., GREENE COUNTY, AT BRIDGE, 2 MILES EAST OF JEFFERSON.	161	1957-	07-06-77	0
05403100	W BUTTRICK CR NR FARNHAMVILLE, IOWA.	LAT 4213XX, LONG 9422XX, IN NW 1/4 SEC. 4, T.85 N., R.30 W., GREENE COUNTY, AT BRIDGE, 5 MILES SE OF FARNHAMVILLE.	80.1	1957-	07-06-77	0
05403180	E BUTTRICK CR NR GRAND JUNCTION, IOWA.	LAT 4204XX, LONG 9416XX, IN NE 1/4 SEC. 30, T.84 N., R.29 W., GREENE COUNTY, AT BRIDGE, 2.5 MILES NW OF GRAND JUNCTION.	79.6	1957-	07-06-77	0
05403200	BUTTRICK CR NR GRAND JUNCTION, IOWA.	LAT 4202XX, LONG 9417XX, AT S 1/4 CORNER SEC.36, T.84 N., R.30 W., GREENE COUNTY, AT BRIDGE, 2.5 MILES WEST OF GRAND JUNCTION.	202	1957-	07-06-77	0
05403250	GREEN BRIER CR NR JAMAICA, IOWA.	LAT 4161XX, LONG 9417XX, NEAR CENTER OF SEC.1, T.81 N., R.30 W., GUTHRIE COUNTY, AT BRIDGE, 1.5 MILES NE OF JAMAICA.	66.0	1957-	07-06-77	0
05403300	N RACCOON R NR PERRY, IOWA.	LAT 4180XX, LONG 9408XX, NEAR CENTER OF SEC.8, T.81 N., R.28 W., DALLAS COUNTY, AT BRIDGE ON STATE HIGHWAY 141, 1 MILE WEST OF PERRY.	2189	1957-	07-06-77	25
05403310	S RACCOON R NR GUTHRIE CENTER, IOWA.	LAT 4141XX, LONG 9432XX, IN SW 1/4 SEC. 38, T.80 N., R.32 W., GUTHRIE COUNTY, AT BRIDGE, 2 MILES NW OF GUTHRIE CENTER.	77.2	1957-	07-06-77	7.6
05403320	BRUSHY FORK CR NR DEDHAM, IOWA.	LAT 4147XX, LONG 9454XX, IN SE 1/4 SEC. 22, T.82 N., R.34 W., CARROLL COUNTY, AT BRIDGE, 2 MILES SE OF DEDHAM.	68.1	1957-	07-06-77	.10
05403330	BRUSHY FORK CR NR GUTHRIE CENTER, IOWA.	LAT 4139XX, LONG 9427XX, NEAR CENTER OF SEC.16, T.79 N., R.31 W., GUTHRIE COUNTY, AT BRIDGE, 3.5 MILES SE OF GUTHRIE CENTER.	142	1957-	07-06-77	9.9
05403340	S RACCOON R NR MONTEITH, IOWA.	LAT 4138XX, LONG 9428XX, IN SE 1/4 SEC. 23, T.79 N., R.31 W., GUTHRIE COUNTY, AT BRIDGE, 0.5 MILE EAST OF MONTEITH.	267	1957-	07-06-77	22
05403350	N RACCOON R NR CARROLL, IOWA.	LAT 4203XX, LONG 9449XX, IN SE 1/4 SEC. 29, T.84 N., R.34 W., CARROLL COUNTY, AT BRIDGE, 2 MILES SE OF CARROLL.	74.3	1957-	07-06-77	1.1
05403360	N RACCOON R NR GLIDDEN, IOWA.	LAT 4203XX, LONG 9446XX, NEAR CENTER OF SEC.38, T.84 N., R.34 W., GREENE COUNTY, AT BRIDGE, 2.6 MILES SW OF GLIDDEN.	138	1957-	07-06-77	1.6
05403380	WILLOW CR NR SCRANTON, IOWA.	LAT 4184XX, LONG 9435XX, IN SW 1/4 SEC. 21, T.82 N., R.32 W., GREENE COUNTY, AT BRIDGE, 9 MILES SW OF SCRANTON.	81.8	1957-	07-06-77	.16
05403400	WILLOW CR NR BAYARD, IOWA.	LAT 4149XX, LONG 9433XX, IN SE 1/4 SEC. 16, T.81 N., R.32 W., GUTHRIE COUNTY, AT BRIDGE, 2 MILES SOUTH OF BAYARD.	112	1957-	07-06-77 07-08-77	2.0 1.3

DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	MEASUREMENTS DATE	DISCHARGE (CFS)
DES MOINES RIVER BASIN--CONTINUED						
05483450	N RACCOON R NR BAYARD, IOWA.	LAT 4147XX, LONG 9430XX, IN SE 1/4 SEC. 31, T.81 N., R.31 W., GUTHRIE COUNTY, AT BRIDGE ON STATE HIGHWAY 25, 8 MILES SE OF BAYARD.	375	1957-	07-05-77 07-06-77	13 12
05483620	MOSQUITO CR NR LINDEN, IOWA.	LAT 4143XX, LONG 9415XX, NEAR S 1/4 CORNER SEC.200, T.80 N., R.29 W., DALLAS COUNTY, AT BRIDGE, 5 MILES NE OF LINDEN.	67.4	1957-	07-05-77	0
05483640	MOSQUITO CR NR REDFIELD, IOWA.	LAT 4138XX, LONG 9413XX, IN NE 1/4 SEC. 27, T.79 N., R.29 W., DALLAS COUNTY, AT BRIDGE, 3 MILES NORTH OF REDFIELD.	110	1957-	07-05-77	0
05483660	N RACCOON R AT REDFIELD, IOWA.	LAT 4136XX, LONG 9413XX, NEAR W 1/4 CORNER SEC.4, T.78 N., R.29 W., DALLAS COUNTY, AT BRIDGE NEAR WEST CITY LIMITS OF REDFIELD.	609	1957-	07-06-77	3.7
05484200	PANTHER CR NR ADEL, IOWA.	LAT 4136XX, LONG 9406XX, NEAR N 1/4 CORNER SEC.5, T.78 N., R.28 W., DALLAS COUNTY, AT BRIDGE, 4 MILES SW OF ADEL.	56.0	1957-	07-05-77	.03
05485600	FOURMILE CR NR ANKENY, IOWA.	LAT 414354, LONG 933421, NEAR S 1/4 CORNER SEC.18, T.80 N., R.23 W., POLK COUNTY, AT BRIDGE, 1.5 MILES EAST OF ANKENY.	59.3	1957-	07-06-77	0
05485700	NORTH R NR EARLHAM, IOWA	LAT 4224XX, LONG 9411XX, IN NE 1/4 SEC. 9, T.76 N., R.29 W., MADISON COUNTY, AT BRIDGE, 7 MILES SW OF EARLHAM.	68.9	1957-	-7-06-77	0
05485850	NB NORTH R NR WINTERSET, IOWA.	LAT 4126XX, LONG 9356XX, IN NE 1/4 SEC. 34, T.77 N., R.27 W., MADISON COUNTY, AT BRIDGE, 7 MILES NE OF WINTERSET.	74.7	1957-	07-06-77	0
05485900	NORTH R NR WINTERSET, IOWA.	LAT 4126XX, LONG 9355XX, IN NW 1/4 SEC. 36, T.77 N., R.27 W., MADISON COUNTY, AT BRIDGE, 8 MILES NE OF WINTERSET.	203	1957-	07-06-77	0
05485100	MIDDLE R NR CASEY, IOWA.	LAT 4130XX, LONG 9429XX, IN SW 1/4 SEC. 36, T.78 N., R.32 W., GUTHRIE COUNTY, AT BRIDGE, 1.5 MILES EAST OF CASEY.	72.8	1957-	07-06-77	.02
05486150	MIDDLE R AT MIDDLE RIVER, IOWA.	LAT 4120XX, LONG 9414XX, NEAR CENTER OF SEC.6, T.75 N., R.29 W., MADISON COUNTY, AT BRIDGE NEAR SOUTH CITY LIMITS OF MIDDLE RIVER.	164	1957-	07-06-77	.05
05486300	CLANTON CR AT EAST PERU, IOWA.	LAT 4114XX, LONG 9355XX, IN NE 1/4 SEC. 11, T.74 N., R.27 W., MADISON COUNTY, AT BRIDGE, NEAR EAST CITY LIMITS OF EAST PERU.	84.5	1957-	07-06-77	0
05486350	CLANTON CR NR MARTENSDALE, IOWA.	LAT 4121XX, LONG 9345XX, IN NE 1/4 SEC. 32, T.76 N., R.25 W., WARREN COUNTY, AT BRIDGE, 2 MILES SW OF MARTENSDALE.	159	1957-	07-06-77	.15
05486400	MIDDLE R AT MARTENSDALE, IOWA.	LAT 4122XX, LONG 9344XX, IN SE 1/4 SEC. 21, T.75 N., R.25 W., WARREN COUNTY, AT BRIDGE ON STATE HIGHWAY 92, 0.5 MILE SE OF MARTENSDALE.	451	1957-	07-06-77	.15
05486700	SOUTH R NR NEW VIRGINIA, IOWA.	LAT 4113XX, LONG 9344XX, IN NE 1/4 SEC. 16, T.74 N., R.25 W., WARREN COUNTY, AT BRIDGE, 2.5 MILES NORTH OF NEW VIRGINIA.	65.4	1957-	07-06-77	0
05486900	SQUAW CR NR JAMISON, IOWA.	LAT 4108XX, LONG 9344XX, IN NE 1/4 SEC. 16, T.73 N., R.25 W., CLARKE COUNTY, AT BRIDGE, 0.5 MILE NW OF JAMISON.	60.8	1957-	07-06-77	0
05487100	SQUAW CR NR INDIANOLA, IOWA.	LAT 4118XX, LONG 9326XX, IN NE 1/4 SEC. 15, T.75 N., R.24 W., WARREN COUNTY, AT BRIDGE, 4 MILES SW OF INDIANOLA.	134	1957-	07-06-77	0
05487200	SOUTH R NR INDIANOLA, IOWA.	LAT 4120XX, LONG 9325XX, IN NE 1/4 SEC. 2, T.75 N., R.24 W., WARREN COUNTY, AT BRIDGE, 2 MILES SW OF INDIANOLA.	278	1957-	07-06-77	.17
05487400	OTTER CR NR NORWOOD, IOWA.	LAT 4109XX, LONG 9332XX, IN SW 1/4 SEC. 5, T.73 N., R.23 W., LUCAS COUNTY, AT BRIDGE, 3 MILES NW OF NORWOOD.	102	1957-	07-06-77	0

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	MEASUREMENTS DATE	DISCHARGE (CFS)
DES MOINES RIVER BASIN--CONTINUED						
05487450	OTTER CR NR MILO, IOWA.	LAT 411702, LONG 932909, IN NE 1/4 SEC. 22, T.75 N., R.23 W., WARREN COUNTY, AT BRIDGE ON STATE HIGHWAY 205, 2 MILES WEST OF MILO.	195	1957-	07-08-77	0
05487700	WHITE BREAST CR NR WOODBURN, IOWA.	LAT 405835, LONG 932514, IN SE 1/4 SEC. 2, T.71 N., R.24 W., CLARKE COUNTY, AT BRIDGE, 2 MILES SOUTH OF WOODBURN.	82.9	1957-	07-08-77	0
05487800	WHITE BREAST CR AT LUCAS, IOWA.	LAT 4101XX, LONG 9328XX, IN NE 1/4 SEC. 23, T.72 N., R.23 W., LUCAS COUNTY, AT BRIDGE ON U.S. HIGHWAY 68, NEAR SOUTH CITY LIMITS OF LUCAS.	128	1957-	07-08-77	0
05487900	WHITE BREAST CR NR NEWBURN, IOWA.	LAT 4110XX, LONG 9321XX, IN SE 1/4 SEC. 35, T.74 N., R.22 W., WARREN COUNTY, AT BRIDGE, 2 MILES WEST OF NEWBURN.	243	1957-	07-08-77	.03
05488200	ENGLISH CR NR KNOXVILLE, IOWA.	LAT 411615, LONG 930528, NEAR CENTER OF SEC.30, T.75 N., R.19 W., MARION COUNTY, AT BRIDGE, 3 MILES SOUTH OF KNOXVILLE.	73.0	1957-	07-07-77	0
05488300	ENGLISH CR NR HARVEY, IOWA.	LAT 4120XX, LONG 9257XX, NEAR E 1/4 CORNER SEC.5, T.75 N., R.18 W., MARION COUNTY, AT BRIDGE, 1.5 MILES NW OF HARVEY.	108	1957-	07-07-77	0
05488550	CEDAR CR AT MELROSE, IOWA.	LAT 4058XX, LONG 9303XX, IN SW 1/4 SEC. 4, T.71 N., R.19 W., MONROE COUNTY, AT BRIDGE NEAR SOUTH CITY LIMITS OF MELROSE.	23.9	1957-	07-06-77	0
05488600	CEDAR CR NR ALBIA, IOWA.	LAT 4101XX, LONG 9253XX, IN NE 1/4 SEC. 26, T.72 N., R.18 W., MONROE COUNTY, AT BRIDGE ON U.S. HIGHWAY 34, 4 MILES WEST OF ALBIA.	102	1958-	07-06-77	0
05488700	CEDAR CR NR LOVILIA, IOWA.	LAT 4107XX, LONG 9256XX, NEAR S 1/4 CORNER SEC.16, T.73 N., R.18 W., MONROE COUNTY, AT BRIDGE, 2 MILES SW OF LOVILIA.	211	1957-	07-06-77	.04
05488800	N CEDAR CR NR LOVILIA, IOWA.	LAT 4109XX, LONG 9303XX, IN NE 1/4 SEC. 4, T.73 N., R.19 W., MONROE COUNTY, AT BRIDGE, 7.5 MILES NW OF LOVILIA.	61.3	1957-	07-06-77	0
05488900	N CEDAR CR NR MARYSVILLE, IOWA.	LAT 4111XX, LONG 9301XX, IN SE 1/4 SEC. 26, T.74 N., R.19 W., MARION COUNTY, AT BRIDGE, 3 MILES WEST OF MARYSVILLE.	111	1958-	07-07-77	0
05489300	N AVERY CR NR CHILLICOTHE, IOWA.	LAT 4106XX, LONG 9233XX, IN SE 1/4 SEC. 26, T.73 N., R.15 W., WAPELLO COUNTY, AT BRIDGE, 1 MILE NW OF CHILLICOTHE.	60.1	1957-	07-06-77	.03
05489400	S AVERY CR AT CHILLICOTHE, IOWA.	LAT 4105XX, LONG 9232XX, AT E 1/4 CORNER SEC.26, T.73 N., R.15 W., WAPELLO COUNTY, AT BRIDGE, NEAR SOUTH CITY LIMITS OF CHILLICOTHE.	61.6	1957-	07-06-77	0
05489900	SOAP CR NR ASH GROVE, IOWA.	LAT 4051XX, LONG 9236XX, IN SW 1/4 SEC. 21, T.70 N., R.15 W., DAVIS COUNTY, AT BRIDGE, 3 MILES SW OF ASH GROVE.	97.3	1958-	07-07-77	.01
05490100	SOAP CR NR FLORIS, IOWA.	LAT 405337, LONG 921553, NEAR CENTER OF SEC.5, T.70 N., R.12 W., DAVIS COUNTY, AT BRIDGE, 4 MILES NE OF FLORIS.	243	1958-	07-07-77	1.3
05490200	LICK CR AT KILBOURN, IOWA.	LAT 4048XX, LONG 9169XX, IN SW 1/4 SEC. 1, T.69 N., R.10 W., VAN BUREN COUNTY, AT BRIDGE NEAR EAST CITY LIMITS OF KILBOURN.	92.7	1958-	07-08-77	0
05490300	CHEQUEST CR NR TROY, IOWA.	LAT 404717, LONG 921101, IN SE 1/4 SEC. 12, T.69 N., R.12 W., DAVIS COUNTY, AT BRIDGE, 3 MILES NE OF TROY.	85.0	1958-	07-07-77	0
05490400	CHEQUEST CR NR PITTSBURG, IOWA.	LAT 404541, LONG 920057, NEAR CENTER OF SEC.21, T.69 N., R.10 W., DAVIS COUNTY, AT BRIDGE, 1.5 MILES NW OF PITTSBURG.	123	1958-	07-08-77	.04
05490700	SUGAR CR NR CHARLESTON, IOWA.	LAT 4034XX, LONG 9134XX, IN NW 1/4 SEC. 33, T.67 N., R.6 W., LEE COUNTY, AT BRIDGE, 2 MILES SW OF CHARLESTON.	62.3	1958-	07-08-77	0

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	MEASUREMENTS DATE	DISCHARGE (CFS)
DES MOINES RIVER BASIN--CONTINUED						
05491000	SUGAR CREEK NR KEOKUK, IOWA.	LAT 402633, LONG 912824, IN NW 1/4 SE 1/4 SEC. 7, T.65 N., R.5 W., LEE COUNTY, AT BRIDGE ON COUNTY HIGHWAY W62, 6 MILES NW OF KEOKUK.	105	+1922-31, 1958-73, 1977-	07-08-77	0
FOX RIVER BASIN						
05494300	FOX RIVER AT BLOOMFIELD	LAT 404610, LONG 922595, IN SW 1/4 SE 1/4 SEC. 13, T.69 N., R.14. W. DAVIS COUNTY, AT BRIDGE ON COUNTY HIGHWAY V20, 1.3 MILES NW OF BLOOMFIELD.	87.7	1957-73, 1977-	07-07-77	0
05494500	FOX R AT CANTRIL, IOWA.	LAT 4039XX, LONG 9203XX, IN SW 1/4 SEC. 30, T.68 N., R.10 W., VAN BUREN COUNTY, AT BRIDGE ON STATE HIGHWAY 2, 1 MILE NE OF CANTRIL.	161	+1941-61, 1958-	07-07-77	.89
FLOYD RIVER BASIN						
06600060	FLOYD R BELOW SHELDON, IOWA.	LAT 430738, LONG 955327, IN N 1/2 SEC. 23, T.96 N., R.43 W., SIOUX COUNTY, AT BRIDGE, 4 MILES SOUTHWEST OF SHELDON.	165	1958-	10-28-76 04-12-77 06-08-77 07-12-77 08-30-77	3.6 6.5 2.7 17 3.5
LITTLE SIOUX RIVER BASIN						
06604500	OCHEYEDAN R NR BIGELOW, MINN.	LAT 4327XX, LONG 9537XX, IN SE 1/4 SEC. 24, T.100 N., R.41 W., OSCEOLA COUNTY, AT BRIDGE IN IOWA, 4.5 MILES SE OF BIGELOW.	69.7	1958-	06-06-77	.09
06604600	L OCHEYEDAN R NR MAY CITY, IOWA.	LAT 4217XX, LONG 9528XX, IN NE 1/4 SEC. 29, T.98 N., R.39 W., OSCEOLA COUNTY, AT BRIDGE, 3 MILES SOUTH OF MAY CITY.	54.2	1958-	06-06-77	.32
06604700	OCHEYEDAN R NR MAY CITY, IOWA.	LAT 4316XX, LONG 9527XX, NEAR N 1/4 CORNER SEC. 34, T.98 N., R.39 W., OSCEOLA COUNTY, AT BRIDGE, 4 MILES SE OF MAY CITY.	226	1958-	06-06-77	4.2
06604900	STONEV CR NR EVERLY, IOWA.	LAT 430922, LONG 951450, IN NE 1/4 SEC. 7, T.96 N., R.37 W., CLAY COUNTY, AT BRIDGE, 4 MILES SE OF EVERLY.	81.6	1958-	06-06-77	1.5
07605000	OCHEYEDAN R NR SPENCER, IOWA.	LAT 430744, LONG 951237, IN SW 1/4 SEC. 15, T.96 N., R.27 W., CLAY COUNTY, AT BRIDGE, 3 MILES SW OF SPENCER.	426	1958-	06-06-77	11
BOYER RIVER BASIN						
06609400	BOYER R NR DENISON, IOWA.	LAT 4200XX, LONG 9523XX, IN NE 1/4 SEC. 16, T.63 N., R.39 W., CRAWFORD COUNTY, AT BRIDGE, 2 MILES SW OF DENISON.	517	1957-	02-03-77 03-03-77 03-17-77 04-05-77 05-02-77 06-01-77 07-12-77 08-01-77	2.1 28 41 69 14 17 14 4.9
NODAWAY RIVER BASIN						
06816300	W NODAWAY R NR CUMBERLAND, IOWA.	LAT 4112XX, LONG 9452XX, IN SW 1/4 SEC. 15, T.74 N., R.35 W., CASS COUNTY, AT BRIDGE, 4 MILES SOUTH OF CUMBERLAND.	65.1	1957-	07-19-77	.61
06816350	SEVENMILE CR NR LYMAN, IOWA.	LAT 4115XX, LONG 9459XX, IN SE 1/4 SEC. 33, T.75 N., R.35 W., CASS COUNTY, AT BRIDGE ON U.S. HIGHWAY 71, 1.5 MILES NORTH OF LYMAN.	60.8	1957-	07-19-77	.69
06816400	SEVENMILE CR NR MORTON HILL, IOWA.	LAT 4106XX, LONG 9500XX, IN NW 1/4 SEC. 33, T.73 N., R.36 W., MONTGOMERY COUNTY, AT BRIDGE, 1 MILE NW OF MORTON HILL.	124	1957-	07-20-77	11
06816550	W NODAWAY R NR VILLISCA, IOWA.	LAT 4055XX, LONG 9500XX, NEAR CENTER OF SEC. 28, T.71 N., R.36 W., MONTGOMERY COUNTY, AT BRIDGE NEAR WEST CITY LIMITS OF VILLISCA.	344	1957-	07-20-77	14
06816600	M NODAWAY R NR BRIDGEWATER, IOWA.	LAT 4110XX, LONG 9439XX, IN NE 1/4 SEC. 33, T.74 N., R.33 W., ADAIR COUNTY, AT BRIDGE, 5 MILES SE OF BRIDGEWATER.	89.3	1957-	07-19-77	0

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	MEASUREMENTS DATE	DISCHARGE (CFS)
HODAMAY RIVER BASIN -- CONTINUED						
06816700	WF H HODAMAY R NR FONTANELLE, IOWA.	LAT 4119XX, LONG 9439XX, NEAR CENTER OF SEC. 4, T.75 N., R.33 W., ADAIR COUNTY, AT BRIDGE, 5 MILES NW OF FONTANELLE.	67.9	1957-	07-19-77	.34
06816800	WF H HODAMAY R NR BRIDGEWATER, IOWA.	LAT 4111XX, LONG 9439XX, NEAR CENTER OF SEC. 28, T.74 N., R.33 W., ADAIR COUNTY, AT BRIDGE, 4.6 MILES SOUTH OF BRIDGEWATER.	129	1957-	07-19-77	3.9
06816900	M HODAMAY R NR VILLISCA, IOWA.	LAT 4055XX, LONG 9459XX, IN NW 1/4 SEC. 34, T.71 N., R.35 W., MONTGOMERY COUNTY, AT BRIDGE ON U.S. HIGHWAY 71, 1 MILE SOUTH OF VILLISCA.	341	1957-	07-20-77	1.9
06817050	E HODAMAY R NR WILLIAMSON, IOWA.	LAT 4105XX, LONG 9433XX, IN NW 1/4 SEC. 28, T.73 N., R.32 W., ADAMS COUNTY, AT BRIDGE, 3 MILES SE OF WILLIAMSON.	54.2	1957-	07-19-77	0
06817100	E HODAMAY R NR SHAMBAUGH, IOWA.	LAT 4038XX, LONG 9501XX, IN NE 1/4 SEC. 6, T.67 N., R.36 W., PAGE COUNTY, AT BRIDGE, 2 MILES SE OF SHAMBAUGH.	333	1957-	07-20-77	.60
06817200	HODAMAY R NR BRADYVILLE, IOWA.	LAT 4037XX, LONG 9501XX, NEAR CENTER OF SEC. 18, T.67 N., R.36 W., PAGE COUNTY, AT BRIDGE, 3 MILES NORTH OF BRADYVILLE.	1135	1957-	07-20-77	13
PLATTE RIVER BASIN						
06818600	PLATTE R NR KENT, IOWA.	LAT 4057XX, LONG 9429XX, IN SW 1/4 SEC. 13, T.71 N., R.32 W., AT BRIDGE, 2 MILES WEST OF KENT.	77.9	1957-	07-19-77	.05
06818850	E PLATTE R NR KNOWLTON, IOWA.	LAT 4054XX, LONG 9428XX, IN NW 1/4 SEC. 4, T.70 N., R.31 W., RINGGOLD COUNTY, AT BRIDGE, 7 MILES NW OF KNOWLTON.	66.8	1957-	07-19-77	0
06818700	PLATTE R NR KNOWLTON, IOWA.	LAT 4052XX, LONG 9428XX, IN NW 1/4 SEC. 16, T.70 N., R.31 W., RINGGOLD COUNTY, AT BRIDGE, 6 MILES NW OF KNOWLTON.	179	1959-	07-19-77	.10
06819100	WB 102 R NR GRAVITY, IOWA.	LAT 4049XX, LONG 9449XX, IN SE 1/4 SEC. 31, T.70 N., R.34 W., TAYLOR COUNTY, AT BRIDGE, 5 MILES NW OF GRAVITY.	52.2	1957-	07-19-77	0
06819120	WB 102 R BELOW NB NR GRAVITY, IOWA.	LAT 4048XX, LONG 9449XX, IN NW 1/4 SEC. 7, T.69 N., R.34 W., TAYLOR COUNTY, AT BRIDGE, 4.5 MILES NW OF GRAVITY.	106	1957-	07-19-77	0
06819140	WB 102 R NR NEW MARKET, IOWA.	LAT 4044XX, LONG 9451XX, IN SW 1/4 SEC. 35, T.69 N., R.35 W., TAYLOR COUNTY, AT BRIDGE, 2.75 MILES EAST OF NEW MARKET.	123	1957-	07-19-77	0
06819150	WF 102 R NR NEW MARKET, IOWA.	LAT 4043XX, LONG 9451XX, IN NW 1/4 SEC. 10, T.68 N., R.35 W., TAYLOR COUNTY, AT BRIDGE, 3 MILES SE OF NEW MARKET.	183	1957-	07-19-77	0
06819180	EF 102 R NR BEDFORD, IOWA.	LAT 4044XX, LONG 9439XX, IN NE 1/4 SEC. 4, T.69 N., R.33 W., TAYLOR COUNTY, AT BRIDGE, 3 MILES NE OF BEDFORD.	60.4	1957-	07-19-77	0
06819195	MF 102 R NR BEDFORD, IOWA.	LAT 4035XX, LONG 9449XX, IN NE 1/4 SEC. 26, T.67 N., R.35 W., TAYLOR COUNTY, AT BRIDGE, 7 MILES SW OF BEDFORD.	99.9	1957-	07-19-77	0
GRAND RIVER BASIN						
06896100	GRAND R AT KNOWLTON, IOWA.	LAT 4050XX, LONG 9420XX, IN SE 1/4 SEC. 29, T.70 N., R.30 W., RINGGOLD COUNTY, AT BRIDGE NEAR EAST CITY LIMITS OF KNOWLTON.	67.5	1957-	07-19-77	.01
06896150	GRAND R NR BLOCKTON, IOWA.	LAT 4037XX, LONG 9425XX, IN SW 1/4 SEC. 10, T.67 N., R.31 W., RINGGOLD COUNTY, AT BRIDGE, 3.5 MILES EAST OF BLOCKTON.	207	1957-	07-19-77	.15
06896200	EF GRAND R NR MT. AYR, IOWA.	LAT 4043XX, LONG 9410XX, IN SE 1/4 SEC. 3, T.68 N., R.29 W., RINGGOLD COUNTY, AT BRIDGE ON STATE HIGHWAY 2, 3 MILES EAST OF MT. AYR.	64.7	1957-	07-19-77	0
06896250	EF GRAND R SOUTH OF MT. AYR, IOWA.	LAT 4035XX, LONG 9414XX, IN SW 1/4 SEC. 19, T.67 N., R.29 W., RINGGOLD COUNTY, AT BRIDGE, 9 MILES SOUTH OF MT. AYR.	95.9	1957-	07-19-77	0

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	MEASUREMENTS DATE	DISCHARGE (CFS)
GRAND RIVER BASIN -- CONTINUED						
06897770	THOMPSON R NR HEBRON, IOWA.	LAT 4114XX, LONG 9416XX, IN SW 1/4 SEC. 1, T.74 N., R.30 W., ADAIR COUNTY, AT BRIDGE, 2 MILES SE OF HEBRON.	80.0	1957-	07-19-77	1.0
06897800	THREEMILE CR NR AFTON, IOWA.	LAT 4102XX, LONG 9408XX, NEAR CENTER OF SEC. 13, T.72 N., R.29 W., ADAIR COUNTY, AT BRIDGE 3 MILES EAST OF AFTON.	54.8	1957-	07-19-77	0
06897820	THOMPSON R NR AFTON, IOWA.	LAT 4102XX, LONG 9406XX, IN SW 1/4 SEC. 17, T.72 N., R.28 W., UNION COUNTY, AT BRIDGE ON U.S. HIGHWAY 34 AND 169, 5 MILES EAST OF AFTON.	231	1957-	07-19-77	.02
06897880	TWELVEMILE CR NR ARISPE, IOWA.	LAT 4056XX, LONG 9406XX, IN SE 1/4 SEC. 17, T.71 N., R.28 W., UNION COUNTY, AT BRIDGE, 6 MILES EAST OF ARISPE.	68.0	1957-	07-19-77	0
06897900	THOMPSON R NR GRAND RIVER, IOWA.	LAT 4052XX, LONG 9358XX, IN NE 1/4 SEC. 16, T.70 N., R.27 W., DECATUR COUNTY, AT BRIDGE, 3.5 MILES NORTH OF GRAND RIVER.	401	1957-	07-20-77	.05
06897940	LONG CR NR VAN VERT, IOWA.	LAT 4049XX, LONG 9352XX, IN NE 1/4 SEC. 32, T.70 N., R.26 W., DECATUR COUNTY, AT BRIDGE, 5 MILES SE OF VAN VERT.	117	1957-	07-20-77	0
06898300	WELDON R EAST OF LEON, IOWA.	LAT 404518, LONG 933805, IN SE 1/4 SEC. 20, T.69 N., R.24 W., DECATUR COUNTY, AT BRIDGE ON STATE HIGHWAY 2, 6 MILES EAST OF LEON.	72.4	1957-	07-20-77	.01
06898480	WELDON R NR PLEASANTON, IOWA.	LAT 403840, LONG 933620, IN NW 1/4 SEC. 22, T.67 N., R.24 W., DECATUR COUNTY, AT BRIDGE, 7 MILES EAST OF PLEASANTON.	228	1957-	07-20-77	.04
06898470	LITTLE R NR LEON, IOWA.	LAT 403936, LONG 934459, IN SE 1/4 SEC. 29, T.68 N., R.25 W., DECATUR COUNTY, AT BRIDGE, 6 MILES SOUTH OF LEON.	69.2	1957-	07-20-77	0
CHARITON RIVER BASIN						
06903300	CHARITON R NR DERBY, IOWA.	LAT 4057XX, LONG 9328XX, IN NW 1/4 SEC. 13, T.71 N., R.23 W., LUCAS COUNTY, AT BRIDGE, 1.5 MILES NORTH OF DERBY.	71.0	1957-	07-21-77	0
06903350	WOLF CR NR CHARITON, IOWA.	LAT 4056XX, LONG 9316XX, IN SE 1/4 SEC. 16, T.71 N., R.21 W., LUCAS COUNTY, AT BRIDGE, 5 MILES SE OF CHARITON.	65.0	1957-	07-21-77	0
06903600	SF CHARITON R NR CAMBRIA, IOWA.	LAT 4049XX, LONG 9323XX, IN NW 1/4 SEC. 3, T.69 N., R.22 W., WAYNE COUNTY, AT BRIDGE, 2 MILES SOUTH OF CAMBRIA.	58.0	1957-	07-20-77	0
06903650	SF CHARITON R NR CORYDON, IOWA.	LAT 4049XX, LONG 9319XX, IN NW 1/4 SEC. 6, T.69 N., R.21 W., AT BRIDGE ON STATE HIGHWAY 14, 4 MILES NORTH OF CORYDON.	68.1	1957-	07-20-77	0
06904180	SHOAL CR NR CINCINNATI, IOWA.	LAT 4037XX, LONG 9252XX, IN SW 1/4 SEC. 6, T.67 N., R.17 W., APPANOOSE COUNTY, AT BRIDGE, 3 MILES EAST OF CINCINNATI.	56.6	1958-	07-21-77	0

* Operated as a continuous-record gaging station

* Also a crest-stage partial-record station

Crest-stage partial-record stations

The following table contains annual maximum discharge for crest-stage stations. A crest-stage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained, but is not published herein. The years given in the period of record represent water years up to the current year for which the annual maximum has been determined.

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1977

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	DATE	ANNUAL MAXIMUM GAGE HEIGHT (FEET)	DISCHARGE (CFS)
UPPER IOWA RIVER BASIN							
06388310	WATERLOO CR NR DORCHESTER, IOWA.	LAT 4327XX, LONG 9130XX, IN NW 1/4 SEC. 25, T.100 N., R.6 W., ALLAMAKEE COUNTY, ON STATE HIGHWAY 76, 1.4 MILES SOUTH OF DORCHESTER.	43.6	1966-	1977	A	(+)
WEXFORD CREEK BASIN							
06388400	WEXFORD CR NR HARPERS FERRY, IOWA.	LAT 4316XX, LONG 9108XX, IN SE 1/4 SEC. 25, T.98 N., R.3 W., ALLAMAKEE COUNTY, AT BRIDGE, 5 MILES NORTH OF HARPERS FERRY.	11.9	1983-	1977	A	(+)
PAINT CREEK BASIN							
06388600	PAINT CR NR WATERVILLE, IOWA.	LAT 4311XX, LONG 9116XX, NEAR CENTER SEC.30, T.97 N., R.4 W., ALLAMAKEE COUNTY, AT BRIDGE, 3 MILES SOUTH-EAST OF WATERVILLE.	56.0	1983-	03-28-77	9.52	1,380
06388700	LITTLE PAINT CR TR NR WATERVILLE, IOWA.	LAT 4314XX, LONG 9115XX, IN SE 1/4 SEC. 1, T.97 N., R.4 W., ALLAMAKEE COUNTY, AT CULVERT, 3.5 MILES NORTHEAST OF WATERVILLE.	1.09	1983-	03-28-77	3.59	280
TURKEY RIVER BASIN							
06411830	NB TURKEY R NR CRESCO, IOWA.	LAT 4322XX, LONG 9213XX, IN NW 1/4 SEC. 25, T.99 N., R.12 W., HOWARD COUNTY, AT BRIDGE ON STATE HIGHWAY 9, ABOUT 5 MILES WEST OF CRESCO.	19.8	1966-	1977	A	(+)
06411680	CRANE CR TR NR SARATOGA, IOWA.	LAT 4322XX, LONG 9223XX, NEAR SOUTHEAST CORNER OF SEC.21, T.99 N., R.13 W., HOWARD COUNTY, AT BRIDGE ON STATE HWY 9, 1 MILE EAST OF SARATOGA.	4.08	1983-	1977	A	(+)
06411700	CRANE CR NR LOURDES, IOWA.	LAT 4315XX, LONG 9219XX, IN NW 1/4 SEC. 8, T.97 N., R.12 W., HOWARD COUNTY, AT BRIDGE ON STATE HIGHWAY 272, 1 MILE SW OF LOURDES.	76.8	1951-	1977	A	(+)
LITTLE MAQUOKETA RIVER BASIN							
06414380	LITTLE MAQUOKETA R NEAR GRAF, IOWA.	LAT 423009, LONG 905150, IN SE 1/4 SEC. 20, T.89 N., R.1 E., DUBUQUE COUNTY, AT BRIDGE, 300 FEET DOWNSTREAM FROM ILLINOIS CENTRAL RR BRIDGE, 0.5 MILE NE OF GRAF.	39.6	1981-	1977	A	(+)
06414400	MF LITTLE MAQUOKETA R NEAR RICKARDSVILLE, IOWA.	LAT 423338, LONG 905135, IN SE 1/4 SEC. 32, T.90 N., R.1 E., DUBUQUE COUNTY, AT BRIDGE, 2 MILES SOUTHEAST OF RICKARDSVILLE.	30.2	1981-	02-28-77	A	(+)
06414450	MF LITTLE MAQUOKETA R NEAR RICKARDSVILLE, IOWA.	LAT 423509, LONG 905120, NEAR NW CORNER SEC. 28, T.90 N., R.1 E., DUBUQUE COUNTY, AT BRIDGE, 1 MILE NE OF RICKARDSVILLE.	21.6	1951-	07-17-77	6.23	700
06414600	LITTLE MAQUOKETA R TR AT DUBUQUE, IOWA.	LAT 423233, LONG 904138, NEAR NW CORNER SEC.11, T.89 N., R.2 E., DUBUQUE COUNTY, AT BRIDGE ON STATE HIGHWAY 386 NR NORTH CITY LIMITS OF DUBUQUE.	1.54	1951-	1977	A	(+)
MAQUOKETA RIVER BASIN							
06417830	PLUM CR AT EARLVILLE, IOWA.	LAT 422813, LONG 911453, IN NE 1/4 SEC. 1, T.88 N., R.4 W., DELAWARE COUNTY, AT BRIDGE ON U.S. HIGHWAY 20, 1.5 MILES SOUTHEAST OF EARLVILLE.	41.1	1986-	1977	A	(+)
06417890	KITTY CR NR LANGWORTHY, IOWA.	LAT 4212XX, LONG 9112XX, IN NW 1/4 SEC. 4, T.85 N., R.3 W., JONES COUNTY, AT BRIDGE ON U.S. HIGHWAY 151, ABOUT 1 MILE NE OF LANGWORTHY.	14.4	1986-	1977	A	(+)

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	DATE	ANNUAL MAXIMUM GAGE HEIGHT (FEET)	DISCHARGE (CFS)
WAPSIPINICON RIVER BASIN							
05420800	LITTLE WAPSIPINICON TR NR RICEVILLE, IOWA.	LAT 4321XX, LONG 9229XX, NEAR S 1/4 CORNER SEC. 27, T. 99 N., R. 14 W., HOWARD COUNTY, AT CULVERT, 3.5 MILES EAST OF RICEVILLE.	0.90	1953-	1977	A	(+)
05420820	LITTLE WAPSIPINICON R NR ACME, IOWA.	LAT 4320XX, LONG 9229XX, AT N 1/4 CORNER SEC. 10, T. 98 N., R. 14 W., HOWARD COUNTY, AT BRIDGE ON CO. ROAD D, 1 MILE NORTH OF ACME.	7.76	1953-	1977	A	(+)
05420840	LITTLE WAPSIPINICON R AT ELMA, IOWA.	LAT 4314XX, LONG 9227XX, IN NW 1/4 SEC. 12, T. 97 N., R. 14 W., HOWARD COUNTY, AT BRIDGE ON COUNTY ROAD A, NEAR WEST CITY LIMITS OF ELMA.	37.3	1953-	1977	A	(+)
05420850	LITTLE WAPSIPINICON R NR NEW HAMPTON, IOWA.	LAT 4304XX, LONG 9224XX, IN NW 1/4 SEC. 9, T. 95 N., R. 13 W., CHICKASAW COUNTY, AT BRIDGE ON U.S. HIGHWAY 18, 4 MILES WEST OF NEW HAMPTON.	95.0	1966-	04-03-77	86.17	1,210
05420890	EF WAPSIPINICON R NR NEW HAMPTON, IOWA.	LAT 4305XX, LONG 9218XX, IN SE 1/4 SEC. 31, T. 96 N., R. 12 W., CHICKASAW CO. AT BRIDGE ON U.S. HIGHWAY 83, 2 MILES NORTH OF NEW HAMPTON.	30.3	1966-	04-03-77	84.62	1,810
05420890	LITTLE WAPSIPINICON R NR ORAN, IOWA.	LAT 4243XX, LONG 9202XX, IN NE 1/4 SEC. 8, T. 91 N., R. 10 W., FAYETTE COUNTY, AT BRIDGE ON STATE HIGHWAY 3, 2 MILES NE OF ORAN.	94.1	1966-	02-28-77	83.32	240
05420855	BUCK CR NR ORAN, IOWA.	LAT 424253, LONG 920733, IN NE 1/4 SEC. 10, T. 91 N., R. 11 W., BREMER COUNTY, AT BRIDGE ON STATE HIGHWAY 3, 2.5 MILES NW OF ORAN.	37.9	1966-	1977	A	(+)
05421100	PINE CR TR NR WINTHROP, IOWA.	LAT 4229XX, LONG 9147XX, IN SW 1/4 SEC. 27, T. 89 N., R. 8 W., BUCHANAN COUNTY, AT CULVERT, 1.4 MILES NORTH OF U.S. HIGHWAY 20 AND 2.5 MILES NW OF WINTHROP.	0.334	1953-	02-28-77	3.90	30
05421200	PINE CR NR WINTHROP, IOWA.	LAT 4228XX, LONG 9147XX, IN SW 1/4 SEC. 34, T. 89 N., R. 8 W., BUCHANAN COUNTY, AT RR BRIDGE, 500 FT UPSTREAM FROM U.S. HIGHWAY 20 AND 2.5 MILES NW OF WINTHROP.	28.3	1950-	1977	A	(+)
05421300	PINE CR TR NO. 2 AT WINTHROP, IOWA.	LAT 4228XX, LONG 9144XX, AT N 1/4 CORNER SEC. 2, T. 88 N., R. 8 W., BUCHANAN COUNTY, AT CULVERT ON U.S. HIGHWAY 20 NEAR WEST CITY LIMITS OF WINTHROP.	0.704	1953-	02-28-77	5.25	(+)
05421550	BUFFALO CR ABOVE WINTHROP, IOWA.	LAT 4230XX, LONG 9144XX, NEAR NE CORNER SEC. 25, T. 89 N., R. 8 W., BUCHANAN COUNTY, AT BRIDGE, 1.5 MILES NE OF WINTHROP.	68.2	1957-	09-18-77	15.83	600
05421600	BUFFALO CR NR WINTHROP, IOWA.	LAT 4228XX, LONG 9143XX, IN NE 1/4 SEC. 1, T. 88 N., R. 8 W., BUCHANAN COUNTY, AT BRIDGE ON U.S. HIGHWAY 20, 1 MILE EAST OF WINTHROP.	71.4	1953-	1977	A	(+)
05421890	SILVER CR AT WELTON, IOWA.	LAT 4155XX, LONG 9036XX, IN NW 1/4 SEC. 18, T. 82 N., R. 3 E., CLINTON COUNTY, AT BRIDGE ON U.S. HIGHWAY 61 AT NORTH EDGE OF WELTON.	9.03	1966-	1977	A	(+)
IOWA RIVER BASIN							
05448400	WESTMAIN DRAINAGE DITCH 1 & 2 NR BRITT, IOWA.	LAT 4306XX, LONG 9347XX, IN SW 1/4 SEC. 27, T. 96 N., R. 25 W., HANCOCK COUNTY, AT BRIDGE ON U.S. HIGHWAY 18 NEAR EAST CITY LIMITS OF BRITT.	21.2	1966-	1977	A	(+)
05448600	EB IOWA R ABOVE HAYFIELD, IOWA.	LAT 4309XX, LONG 9341XX, NEAR S 1/4 CORNER SEC. 4, T. 96 N., R. 24 W., HANCOCK COUNTY, AT BRIDGE, 1.8 MILES SE OF HAYFIELD.	2.23	1953-	1977	A	(+)
05448700	EB IOWA R NR HAYFIELD, IOWA.	LAT 4311XX, LONG 9339XX, IN NW 1/4 SEC. 35, T. 97 N., R. 24 W., HANCOCK COUNTY, AT BRIDGE, 2 MILES EAST OF HAYFIELD.	7.94	1952-	1977	A	(+)
05448800	EB IOWA R NR GARNER, IOWA.	LAT 4306XX, LONG 9337XX, NEAR CENTER SEC. 25, T. 96 N., R. 24 W., HANCOCK COUNTY, AT BRIDGE ON U.S. HIGHWAY 18, 1.2 MILES WEST OF GARNER.	45.1	1952-	1977	A	(+)

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	ANNUAL MAXIMUM GAGE DATE	HEIGHT (FEET)	DISCHARGE (CFS)
IOWA RIVER BASIN--CONTINUED							
08448990	EB IOWA R TR NR GARNER, IOWA.	LAT 4306XX, LONG 9340XX, NEAR CENTER SEC. 27, T.98 N., R.24 W., HANCOCK COUNTY, AT CULVERT ON U.S. HWY 18, 2.1 MILES WEST OF GARNER.	5.98	1952-	1977	A	(+)
08451955	STEIN CR NR CLUTIER, IOWA.	LAT 420446, LONG 921800, IN NE 1/4 SEC. 24, T.84 N., R.13 W., TAMA COUNTY, AT BRIDGE ON STATE HIGHWAY 318, 5 MILES EAST OF CLUTIER.	23.4	1971-	03-19-75 1977	73.27 A	1,180 B (+)
08453200	PRICE CR AT AMANA, IOWA.	LAT 4148XX, LONG 9153XX, IN SE 1/4 SEC. 22, T.81 N., R.9 W., IOWA COUNTY, AT BRIDGE ON STATE HIGHWAY 149, NEAR NORTH EDGE OF AMANA.	29.1	1966-	08-18-77	85.81	3,500
08453600	RAPID CR BELOW MORSE, IOWA.	LAT 414345, LONG 912538, NEAR NE CORNER SEC. 21, T.80 N., R.5 W., JOHNSON COUNTY, AT BRIDGE, 1.5 MILES SE OF MORSE.	8.12	1951-	08-16-77	22.91	1,450
08453750	RAPID CR SW OF MORSE, IOWA.	LAT 414323, LONG 912516, IN W 1/2 SEC. 21, T.80 N., R.5 W., JOHNSON COUNTY, AT BRIDGE, 2 MILES SOUTHWEST OF MORSE.	15.2	1951-	08-16-77	28.49	2,700
08453850	RAPID CR TR NO. 3 NR OASIS, IOWA.	LAT 414233, LONG 912714, NEAR CENTER OF SEC. 29, T.80 N., R.5 W., JOHNSON COUNTY, AT BRIDGE, 3.5 MILES WEST OF OASIS.	1.62	1951-	08-16-77	19.86	170
08453900	RAPID CR TR NR OASIS, IOWA.	LAT 414114, LONG 912637, NEAR SW CORNER SEC. 33, T.80 N., R.5 W., JOHNSON COUNTY, AT BRIDGE, 3 MILES SW OF OASIS.	.97	1951-	08-16-77	14.75	400
08453950	RAPID CR TR NR IOWA CITY, IOWA.	LAT 414156, LONG 912839, IN NW 1/4 SEC. 31, T.80 N., R.5 W., JOHNSON COUNTY, AT BRIDGE, 4 MILES NE OF IOWA CITY.	3.43	1951-	08-16-77	28.04	1,300
08455109	OLD HANS CR NR IOWA CITY, IOWA.	LAT 413623, LONG 913656, IN NW 1/4 SEC. 38, T.79 N., R.7 W., JOHNSON COUNTY, AT BRIDGE, 3 MILES SOUTHWEST OF IOWA CITY.	201	1950-64, 1965-	05-16-77	13.00	3,300
08455140	N ENGLISH R NR MONTEZUMA, IOWA.	LAT 413845, LONG 923420, IN SW 1/4 SEC. 14, T.79 N., R.15 W., POWESHIEK CO., AT BRIDGE, 8.0 MILES NORTHWEST OF MONTEZUMA.	31.0	1972-	08-16-77	28.70	3,700
08455200	N ENGLISH R NR GUERNSEY, IOWA.	LAT 4138XX, LONG 9224XX, NEAR SW CORNER SEC. 17, T.79 N., R.13 W., POWESHIEK COUNTY, AT BRIDGE, 2.2 MILES WEST OF GUERNSEY.	68.7	1953-	09-18-77	14.49	5,200
08455210	N ENGLISH R AT GUERNSEY, IOWA.	LAT 4138XX, LONG 9221XX, IN NW 1/4 SEC. 22, T.79 N., R.13 W., POWESHIEK CO., AT BRIDGE ON STATE HIGHWAY 21, 1 MILE SW OF GUERNSEY.	81.5	1960, 1966-	09-18-77	87.36	11,800
08455230	DEEP R AT DEEP RIVER, IOWA.	LAT 4135XX, LONG 9221XX, IN SW 1/4 SEC. 3, T.78 N., R.13 W., POWESHIEK CO., AT BRIDGE ON STATE HIGHWAY 21, 1 MILE NE OF DEEP RIVER.	30.5	1960, 1966-	08-16-77	80.55	1,100
08455280	S ENGLISH R NR BARNES CITY, IOWA. (DISC.)	LAT 4133XX, LONG 9228XX, NEAR NE CORNER SEC. 21, T.78 N., R.14 W., POWESHIEK COUNTY, AT BRIDGE, 3 MILES NORTH OF BARNES CITY.	2.51	1953-76.	--	--	--
08455300	S ENGLISH R NR BARNES CITY, IOWA.	LAT 4131XX, LONG 9228XX, NEAR NW CORNER SEC. 34, T.78 N., R.14 W., POWESHIEK COUNTY, AT BRIDGE, 1 MILE NORTH OF BARNES CITY.	11.6	1953-	08-16-77	11.00	310
08455350	S ENGLISH R TR NO. 2 NR MONTEZUMA, IOWA.	LAT 4134XX, LONG 9227XX, NEAR SW CORNER SEC. 11, T.78 N., R.14 W., POWESHIEK COUNTY, AT BOX CULVERT, 4 MILES SE OF MONTEZUMA.	0.523	1953-	08-16-77	8.65	33

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	DATE	ANNUAL MAXIMUM	DISCHARGE (CFS)
						GAGE HEIGHT (FEET)	
IOWA RIVER BASIN--CONTINUED							
05455550	BULGERS RUN NR RIVERSIDE, IOWA.	LAT 4129XX, LONG 9139XX, IN SE 1/4 SEC. 11, T.77 N., R.7 W., WASHINGTON CO., AT BRIDGE ON STATE HIGHWAY 22, 2.5 MILES WEST OF RIVERSIDE.	6.31	1965-	1977	A	(+)
05457440	DEER CR NR CARPENTER, IOWA.	LAT 4325XX, LONG 9259XX, IN NE 1/4 SEC. 8, T.99 N., R.18 W., MITCHELL COUNTY, AT BRIDGE ON STATE HIGHWAY 105, 1.5 MILES EAST OF CARPENTER.	91.6	1965-	1977	A	(+)
05458560	BEAVERDAM CR NR SHEFFIELD, IOWA.	LAT 4256XX, LONG 9312XX, IN NW 1/4 SEC. 27, T.94 N., R.20 W., CERRO GORDO CO. AT BRIDGE ON U.S. HIGHWAY 65, 3 MILES NORTH OF SHEFFIELD.	123	1965-	05-06-77	85.73	1,050
05459010	ELK CR AT KENSETT, IOWA.	LAT 4322XX, LONG 9313XX, IN NE 1/4 SEC. 28, T.95 N., R.20 W., WORTH COUNTY, AT BRIDGE ON U.S. HIGHWAY 65, 1 MILE NORTH OF KENSETT.	58.1	1965-	1977	A	(+)
05459490	SPRING CR NR MASON CITY, IOWA.	LAT 431248, LONG 931238, IN SE 1/4 SEC. 18, T.97 N., R.20 W., CERRO GORDO CO. AT BRIDGE ON U.S. HIGHWAY 65, 4 MILES NORTH OF MASON CITY.	29.3	1965-	1977	A	(+)
05460100	WILLOW CR NR MASON CITY, IOWA.	LAT 4309XX, LONG 9315XX, IN NE 1/4 SEC. 12, T.96 N., R.21 W., CERRO GORDO CO. AT BRIDGE ON U.S. HIGHWAY 18, 3.5 MILES WEST OF MASON CITY.	78.6	1965-	1977	A	(+)
05462750	BEAVER CR TR NR APLINGTON, IOWA.	LAT 4235XX, LONG 9251XX, IN NW 1/4 SEC. 27, T.90 N., R.17 W., BUTLER COUNTY, AT BRIDGE ON U.S. HIGHWAY 20, 2 MILES EAST OF APLINGTON.	11.6	1965-	1977	A	(+)
05463090	BLACK HAWK CR AT GRUNDY CENTER, IOWA.	LAT 4222XX, LONG 9246XX, IN NW 1/4 SEC. 7, T.87 N., R.18 W., GRUNDY COUNTY, AT BRIDGE ON STATE HIGHWAY 14, AT NORTH EDGE OF GRUNDY CENTER.	56.9	1965-	1977	A	(+)
05464145	TWELVE MILE CR NR TRAEER, IOWA.	LAT 421350, LONG 922756, IN SE 1/4 SEC. 27, T.88 N., R.14 W., TAMA COUNTY, AT BRIDGE ON U.S. HIGHWAY 63, 2.5 MILES NORTH OF TRAEER.	43.8	1965-	1977	A	(+)
05464310	PRATT CR NR GARRISON, IOWA.	LAT 421053, LONG 921110, IN SE 1/4 SEC. 12, T.85 N., R.12 W., BENTON COUNTY, AT BRIDGE ON U.S. HIGHWAY 218, 3.5 MILES NW OF GARRISON.	23.4	1965-	09-18-77	91.23	(+)
05464318	E BLUE CR AT CENTER POINT, IOWA.	LAT 421244, LONG 914721, IN SW 1/4 SEC. 33, T.86 N., R.8 W., LINN COUNTY, AT BRIDGE ON STATE HIGHWAY 150, 1.5 MILES NORTH OF CENTER POINT.	17.6	1965-	1977	A	(+)
05464560	PRAIRIE CR AT BLAIRSTOWN, IOWA.	LAT 415442, LONG 920503, IN SW 1/4 SEC. 13, T.82 N., R.11 W., BENTON COUNTY, AT BRIDGE ON STATE HIGHWAY 82, AT NORTH EDGE OF BLAIRSTOWN.	87.0	1965-	08-16-77	82.74	2,000
05464880	OTTER CR AT WILTON, IOWA.	LAT 413617, LONG 910208, IN NE 1/4 SEC. 38, T.79 N., R.2 W., CEDAR COUNTY, AT BRIDGE ON STATE HIGHWAY 38, 1.5 MILES NW OF WILTON.	10.7	1965-	06-30-77	87.64	2,000
05465150	NF LONG CR AT AINSWORTH, IOWA.	LAT 4117XX, LONG 9132XX, IN SW 1/4 SEC. 22, T.75 N., R.6 W., WASHINGTON CO., AT BRIDGE ON U.S. HIGHWAY 218, 1 MILE SE OF AINSWORTH.	30.2	1951-1965-	08-08-77	88.29	600

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	DATE	ANNUAL MAXIMUM GAGE HEIGHT (FEET)	DISCHARGE (CFS)
SKUNK RIVER BASIN							
05489860	MUD LAKE DRAINAGE DITCH 71 IN JEWELL, IOWA.	LAT 4219XX, LONG 9338XX, IN SW 1/4 SEC. 27, T.87 N., R.24 W., HAMILTON CO., AT BRIDGE ON U.S. HIGHWAY 69 IN JEWELL.	55.4	1966-	08-08-77	89.05	1,870
05489990	KEIGLEY BR NR STORY CITY, IOWA.	LAT 4209XX, LONG 9337XX, IN NW 1/4 SEC. 28, T.88 N., R.24 W., STORY COUNTY, AT BRIDGE ON U.S. HIGHWAY 89, 3 MILES SOUTH OF STORY CITY.	31.0	1966-	08-16-77	88.69	810
05472090	N SKUNK R NR BAXTER, IOWA.	LAT 4149XX, LONG 9304XX, IN NE 1/4 SEC. 21, T.81 N., R.19 W., JASPER COUNTY, AT BRIDGE ON STATE HIGHWAY 223, 4.5 MILES EAST OF BAXTER.	52.2	1966-	1977	A	(+)
05472290	SUGAR CR NR SEARSBORO, IOWA.	LAT 4134XX, LONG 9244XX, IN SE 1/4 SEC. 7, T.78 N., R.16 W., POWESHIEK CO., AT BRIDGE ON STATE HIGHWAY 228, 1.8 MILES WEST OF SEARSBORO.	52.7	1966-	09-18-77	90.36	1,020
05472390	MIDDLE CR NR LACEY, IOWA.	LAT 4128XX, LONG 9239XX, IN NE 1/4 SEC. 1, T.78 N., R.16 W., MAHASKA COUNTY, AT BRIDGE ON U.S. HIGHWAY 63, 1.5 MILES NW OF LACEY.	23.0	1966-	1977	A	(+)
05472445	ROCK CR AT SIGOURNEY, IOWA.	LAT 412012, LONG 921320, IN NE 1/4 SEC. 3, T.75 N., R.12 W., KEOKUK COUNTY, AT BRIDGE ON STATE HIGHWAY 92, NEAR WEST EDGE OF SIGOURNEY.	25.3	1966-	08-15-77	88.36	200
05473300	CEDAR CR NR BATAVIA, IOWA.	LAT 4101XX, LONG 9207XX, IN SW 1/4 SEC. 27, T.72 N., R.11 W., JEFFERSON CO., AT BRIDGE ON U.S. HIGHWAY 34, 2.5 MILES NE OF BATAVIA.	282	1966-	08-08-77	77.82	3,200
DES MOINES RIVER BASIN							
05480930	WHITE FOX CR AT CLARION, IOWA.	LAT 4244XX, LONG 9342XX, IN NW 1/4 SEC. 5, T.91 N., R.24 W., WRIGHT COUNTY, AT BRIDGE ON STATE HIGHWAY 3, 1.5 MILES EAST OF CLARION.	13.3	1966-	1977	A	(+)
05481510	BLUFF CR AT PILOT MOUND, IOWA.	LAT 4210XX, LONG 9401XX, IN NW 1/4 SEC. 20, T.88 N., R.27 W., BOONE COUNTY, AT BRIDGE ON STATE HIGHWAY 329, AT NW EDGE OF PILOT MOUND.	23.8	1966-	08-16-77	84.97	410
05481680	BEAVER CR AT BEAVER, IOWA.	LAT 4202XX, LONG 9409XX, IN NE 1/4 SEC. 8, T.83 N., R.28 W., BOONE COUNTY, AT BRIDGE ON U.S. HIGHWAY 30, AT SW EDGE OF BEAVER.	38.5	1966-	08-08-77	88.67	630
05481690	W BEAVER CR AT GRAND JUNCTION, IOWA.	LAT 4202XX, LONG 9413XX, IN NE 1/4 SEC. 3, T.83 N., R.29 W., GREENE COUNTY, AT BRIDGE ON U.S. HIGHWAY 30, NEAR EAST EDGE OF GRAND JUNCTION.	12.6	1966-	1977	A	(+)
05482600	HARDIN CR AT FARNHAMVILLE, IOWA.	LAT 421601, LONG 942510, NEAR NE CORNER SEC. 14, T.86 N., R.31 W., CALHOUN CO., AT BRIDGE ON STATE HIGHWAY 175, NEAR WEST CITY LIMITS OF FARNHAMVILLE.	43.7	1952-	08-21-77	7.85	250
05482800	HAPPY RUN AT CHURDAN, IOWA.	LAT 4210XX, LONG 9430XX, NEAR SW CORNER SEC. 17, T.85 N., R.31 W., GREENE CO., AT BRIDGE NEAR WEST CITY LIMITS OF CHURDAN.	7.58	1952-	08-21-77	4.49	(+)
05482900	HARDIN CR NR FARLIN, IOWA.	LAT 4206XX, LONG 9426XX, NEAR N 1/4 CORNER SEC. 14, T.84 N., R.31 W., GREENE COUNTY, AT BRIDGE, 1.5 MILES NE OF FARLIN.	101	1951-	1977	A	(+)
05483318	BRUSHY FORK CR NR TEMPLETON, IOWA.	LAT 4157XX, LONG 9453XX, IN NW 1/4 SEC. 1, T.82 N., R.35 W., CARROLL COUNTY, AT BRIDGE ON U.S. HIGHWAY 71, 4 MILES NE OF TEMPLETON.	45.0	1966-	1977	A	(+)
05483349	N RACCOON R TR AT CARROLL, IOWA.	LAT 4203XX, LONG 9453XX, IN NW 1/4 SEC. 36, T.84 N., R.35 W., CARROLL COUNTY, AT BRIDGE ON U.S. HIGHWAY 71, 1.5 MILES SOUTH OF CARROLL.	6.58	1966-	1977	A	(+)
05487350	S OTTER CR TR NR WOODBURN, IOWA.	LAT 4103XX, LONG 9336XX, NEAR SW CORNER SEC. 11, T.72 N., R.24 W., CLARKE CO., AT BRIDGE, 2 MILES NORTH OF WOODBURN.	0.71	1955-	1977	A	(+)

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ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	DATE	ANNUAL MAXIMUM		DISCHARGE (CFS)
						GAGE HEIGHT (FEET)	DRAINAGE	
DES MOINES RIVER BASIN--CONTINUED								
05487600	S WHITE BREAST CR NR OSCEOLA, IOWA.	LAT 405736, LONG 934128, NEAR SW CORNER SEC. 12, T.71 N., R.25 W., CLARKE COUNTY, AT BRIDGE, 6 MILES SE OF OSCEOLA.	28.0	1953-	1977	A	(+)	
05487800	*WHITE BREAST CR AT LUCAS, IOWA.	LAT 4101XX, LONG 9328XX, IN NE 1/4 SEC. 23, T.72 N., R.23 W., LUCAS COUNTY, AT BRIDGE ON U.S. HIGHWAY 85, NEAR SOUTH CITY LIMITS OF LUCAS.	128	1953-	08-26-77	16.05		6,500
05488620	COAL CR NR ALBIA, IOWA.	LAT 4101XX, LONG 9251XX, IN SW 1/4 SEC. 20, T.72 N., R.17 W., MONROE COUNTY, AT BRIDGE ON U.S. HIGHWAY 34, 2 MILES SW OF ALBIA.	13.5	1965-	08-08-77	86.14	(+)	
05489150	L MUCHAKINOCK CR AT OSKALOOSA, IOWA.	LAT 4116XX, LONG 9238XX, IN SE 1/4 SEC. 25, T.75 N., R.16 W., MAHASKA COUNTY, AT BRIDGE ON STATE HIGHWAY 137, AT SOUTH EDGE OF OSKALOOSA.	9.12	1965-	1977	A	(+)	
05489350	S AVERY CR NR BLAKESBURG, IOWA.	LAT 4101XX, LONG 9237XX, IN SE 1/4 SEC. 19, T.72 N., R.15 W., WAPELLO COUNTY, AT BRIDGE ON U.S. HIGHWAY 34, 3.5 MILES NORTH OF BLAKESBURG.	33.1	1965-	08-07-77	88.00		11,000
05489490	BEAR CR AT OTTUMWA, IOWA.	LAT 410043, LONG 922754, IN NW 1/4 SEC. 27, T.72 N., R.14 W., WAPELLO COUNTY, AT BRIDGE ON U.S. HIGHWAY 34, NEAR WEST EDGE OF OTTUMWA.	22.9	1965-	08-07-77	92.13		4,300
FOX RIVER BASIN								
05494100	S FOX CR TR NR WEST GROVE, IOWA.	LAT 4044XX, LONG 9238XX, NEAR S 1/4 CORNER SEC. 31, T.69 N., R.15 W., DAVIS CO., AT CULVERT ON STATE HIGHWAY 2, 3.5 MILES WEST OF WEST GROVE.	0.55	1953-	08-07-77	5.20	(+)	
05494110	S FOX CR NR WEST GROVE, IOWA.	LAT 4044XX, LONG 9236XX, IN SE 1/4 SEC. 32, T.69 N., R.15 W., DAVIS COUNTY, AT BRIDGE ON STATE HIGHWAY 2, 2.4 MILES WEST OF WEST GROVE.	12.2	1965-	1977	A	(+)	
BIG SIOUX RIVER BASIN								
06483410	OTTER CR NORTH OF SIBLEY, IOWA.	LAT 4328XX, LONG 9544XX, AT NE CORNER SEC. 25, T.100 N., R.42 W., OSCEOLA CO., AT BRIDGE ON COUNTY ROAD H, 4 MILES NORTH OF SIBLEY.	11.9	1952-	03-13-77	6.37		180
06483420	SCHUTTE CR NR SIBLEY, IOWA.	LAT 4328XX, LONG 9547XX, NEAR NW CORNER SEC. 23, T.100 N., R.42 W., OSCEOLA COUNTY, AT CULVERT, 6 MILES NW OF SIBLEY.	1.43	1952-	03-13-77	7.73	(+)	
06483430	OTTER CR AT SIBLEY, IOWA.	LAT 4324XX, LONG 9546XX, NEAR N 1/4 CORNER SEC. 14, T.99 N., R.42 W., OSCEOLA CO., AT BRIDGE, 1 MILE NW OF SIBLEY.	29.9	1952-	03-13-77	5.91		115
06483440	DAWSON CR NR SIBLEY, IOWA.	LAT 4323XX, LONG 9543XX, NEAR NW CORNER SEC. 20, T.99 N., R.41 W., OSCEOLA CO., AT CULVERT ON COUNTY ROAD D, 2 MILES SE OF SIBLEY.	4.35	1952-	09-30-77	4.38		65
06483450	WAGNER CR NR ASHTON, IOWA.	LAT 4321XX, LONG 9546XX, ON SOUTH LINE SEC. 35, T.99 N., R.42 W., OSCEOLA COUNTY, AT BRIDGE, 3 MILES NE OF ASHTON.	7.09	1952-	04-14-77	13.20		36
06483460	*OTTER CR NR ASHTON, IOWA.	LAT 4320XX, LONG 9546XX, IN SE 1/4 SEC. 2, T.98 N., R.42 W., OSCEOLA COUNTY, AT BRIDGE, 2 MILES NORTHEAST OF ASHTON.	88.0	1952-	1977	A	(+)	
06483495	BURR OAK CR NR PERKINS, IOWA.	LAT 431443, LONG 961038, IN SE 1/4 SEC. 5, T.97 N., R.45 W., SIOUX CO., AT BRIDGE ON U.S. HIGHWAY 75, 4 MILES NORTH OF PERKINS.	30.9	1965-	08-16-77	83.01		49

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	DATE	ANNUAL MAXIMUM GAGE HEIGHT (FEET)	DISCHARGE (CFS)
PERRY CREEK BASIN							
06599800	PERRY CR NR MERRILL, IOWA.	LAT 424316, LONG 952033, IN NW 1/4 SEC. 12, T.91 N., R.47 W., PLYMOUTH CO., AT BRIDGE ON COUNTY ROAD M, 5 MILES WEST OF MERRILL.	8.17	1953-	06-23-77	9.38	2,100
06599950	PERRY CR NR HINTON, IOWA.	LAT 423757, LONG 952213, IN NE 1/4 SEC. 15, T.90 N., R.47 W., PLYMOUTH CO., AT BRIDGE, 4 MILES WEST OF HINTON.	30.8	1953-	06-23-77	34.70	(+)
FLOYD RIVER BASIN							
06500030	L FLOYD R NR SANBORN, IOWA.	LAT 431110, LONG 954330, IN NE 1/4 SEC. 31, T.97 N., R.41 W., O BRIEN CO., AT BRIDGE ON U.S. HIGHWAY 19, 3.5 MILES WEST OF SANBORN.	8.44	1966-	1977	A	(+)
06500090	WILLOW CR AT HOSPER, IOWA.	LAT 430438, LONG 955416, IN NE 1/4 SEC. 3, T.95 N., R.43 W., SIOUX CO., AT BRIDGE ON STATE HIGHWAY 60, AT NORTH EDGE OF HOSPERS.	37.9	1966-	1977	A	(+)
MONONA-HARRISON DITCH BASIN							
06501480	BIG WHISKEY SLOUGH NR REMSEN, IOWA.	LAT 4248XX, LONG 9553XX, IN NW 1/4 SEC. 11, T.92 N., R.43 W., PLYMOUTH CO., AT BRIDGE ON STATE HIGHWAY 3, 4.2 MILES EAST OF REMSEN.	12.9	1966-	1977	A	(+)
06502190	ELLIOTT CR AT LAWTON, IOWA.	LAT 422830, LONG 951122, IN NW 1/4 SEC. 3, T.98 N., R.46 W., WOODBURY CO., AT BRIDGE ON U.S. HIGHWAY 20, AT WEST EDGE OF LAWTON.	34.8	1966-	08-11-77	83.03	2,300
06502240	BIG WHISKEY CR NR LAWTON, IOWA.	LAT 422830, LONG 951501, IN NW 1/4 SEC. 8, T.98 N., R.46 W., WOODBURY CO., AT BRIDGE ON U.S. HIGHWAY 20, 3.5 MILES WEST OF LAWTON.	51.3	1966-	1977	A	(+)
LITTLE SIOUX RIVER BASIN							
06504510	OCHEYEDAN R NR OCHEYEDAN, IOWA.	LAT 4326XX, LONG 9537XX, IN NE 1/4 SEC. 8, T.99 N., R.40 W., OSCEOLA CO., AT BRIDGE ON STATE HIGHWAY 9, 4 MILES NW OF OCHEYEDAN.	73.5	1966-	1977	A	(+)
06505340	PRAIRIE CR NR SPENCER, IOWA.	LAT 430516, LONG 950940, IN SE 1/4 SEC. 35, T.98 N., R.37 W., CLAY COUNTY, AT BRIDGE ON U.S. HIGHWAY 71, 4 MILES SOUTH OF SPENCER.	22.3	1966-	1977	A	(+)
06505750	WILLOW CR NR CORNELL, IOWA.	LAT 4243XX, LONG 9510XX, IN SE 1/4 SEC. 12, T.94 N., R.37 W., CLAY COUNTY, AT BRIDGE ON U.S. HIGHWAY 71, 2 MILES NW OF CORNELL.	78.6	1966-	1977	A	(+)
06505890	WATERMAN CR AT HARTLEY, IOWA.	LAT 431106, LONG 953043, IN NE 1/4 SEC. 36, T.97 N., R.40 W., O BRIEN CO., AT BRIDGE ON U.S. HIGHWAY 18, 1.8 MILES WEST OF HARTLEY.	28.7	1966-	1977	A	(+)
06506790	MAPLE CR NR ALTA, IOWA.	LAT 4245XX, LONG 9522XX, IN NE 1/4 SEC. 31, T.92 N., R.38 W., BUENA VISTA CO., AT BRIDGE ON STATE HIGHWAY 3, 6 MILES NW OF ALTA.	15.5	1966-	1977	A	(+)
06507197	WILSEY CR AT MAPLETON, IOWA.	LAT 4210XX, LONG 9545XX, IN SE 1/4 SEC. 14, T.95 N., R.43 W., MONONA CO., AT BRIDGE ON STATE HIGHWAY 141, 1.2 MILES NW OF MAPLETON.	18.4	1966-	07-21-77	86.41	(+)

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ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	DATE	ANNUAL MAXIMUM GAGE HEIGHT (FEET)	DISCHARGE (CFS)
SOLDIER RIVER BASIN							
08808450	JORDAN CR AT MOORHEAD, IOWA.	LAT 4158XX, LONG 9552XX, IN NW 1/4 SEC. 18, T.82 N., R.43 W., MONROE CO., AT BRIDGE ON STATE HIGHWAY 183, AT SW CORNER OF MOORHEAD.	30.1	1966-	1977	80.08	(+)
BOYER RIVER BASIN							
08809550	WILLOW CR NR SOLDIER, IOWA.	LAT 4155XX, LONG 9542XX, IN NW 1/4 SEC. 14, T.82 N., R.42 W., MONROE CO., AT BRIDGE ON STATE HIGHWAY 37, 8 MILES SE OF SOLDIER.	29.1	1966-	08-30-77	74.34	(+)
MOSQUITO CREEK BASIN							
08810510	MOSER CR NR EARLING, IOWA.	LAT 4147XX, LONG 9527XX, IN NE 1/4 SEC. 1, T.80 N., R.40 W., SHELBY CO., AT BRIDGE ON STATE HIGHWAY 37, 1.5 MILES WEST OF EARLING.	21.6	1966-	05-21-77	78.95	(+)
08810600	MOSQUITO CR AT NEOLA, IOWA.	LAT 412709, LONG 953637, IN NE 1/4 SEC. 19, T.77 N., R.42 W., POTTAWATTAMIE CO., AT BRIDGE ON COUNTY ROAD 3, 0.5 MILE SOUTH OF NEOLA.	131	1966-	05-21-77	18.93	(+)
HISHNABOTNA RIVER BASIN							
08807418	GRAYBILL CR NR CARSON, IOWA.	LAT 4114XX, LONG 9523XX, IN NW 1/4 SEC. 7, T.74 N., R.39 W., POTTAWATTAMIE CO., AT BRIDGE ON STATE HIGHWAY 92, 2 MILES EAST OF CARSON.	45.9	1966-	1977	A	(+)
08807470	INDIAN CR NR EMERSON, IOWA.	LAT 4102XX, LONG 9523XX, IN NW 1/4 SEC. 19, T.72 N., R.39 W., MONTGOMERY CO., AT BRIDGE ON U.S. HIGHWAY 34, 1 MILE EAST OF EMERSON.	37.3	1966-	08-31-77	88.29	820
08807720	M SILVER CR NR AVOCA, IOWA.	LAT 412833, LONG 952806, NEAR N 1/4 CORNER SEC. 17, T.77 N., R.40 W., POTTAWATTAMIE CO., AT BRIDGE ON STATE HIGHWAY 83, 7 MILES SOUTH OF AVOCA.	3.21	1955-	08-05-77	6.49	200
08807760	M SILVER CR NR OAKLAND, IOWA.	LAT 411928, LONG 953319, NEAR E 1/4 CORNER SEC. 4, T.75 N., R.41 W., POTTAWATTAMIE CO., AT BRIDGE, 8.5 MILES NW OF OAKLAND.	25.7	1953-	05-21-77	4.59	280
08807780	M SILVER CR AT TREYNOR, IOWA.	LAT 411437, LONG 953653, NEAR NE CORNER SEC. 1, T.74 N., R.42 W., POTTAWATTAMIE CO., AT BRIDGE ON COUNTY ROAD F, 1 MILE NORTH OF TREYNOR.	42.7	1953-	1977	A	(+)
08808880	BLUEGRASS CR AT AUDUBON, IOWA.	LAT 4143XX, LONG 9456XX, IN NW 1/4 SEC. 28, T.80 N., R.35 W., AUDUBON CO., AT BRIDGE ON U.S. HIGHWAY 71, NEAR SOUTH EDGE OF AUDUBON.	15.4	1966-	1977	A	(+)
TARKIO RIVER BASIN							
08811760	TARKIO R NR ELLIOT, IOWA.	LAT 4108XX, LONG 9506XX, NEAR NE CORNER SEC. 28, T.73 N., R.37 W., MONTGOMERY COUNTY, AT BRIDGE, 4.5 MILES SE OF ELLIOT.	10.7	1952-	08-27-77	11.59	1,400
08811800	E TARKIO CR NR STANTON, IOWA.	LAT 4108XX, LONG 9505XX, IN W 1/2 SEC. 34, T.73 N., R.37 W., MONTGOMERY CO., AT BRIDGE, 7 MILES NORTH OF STANTON.	4.66	1952-	08-27-77	11.61	1,900
08811820	TARKIO R TR NR STANTON, IOWA.	LAT 4103XX, LONG 9506XX, NEAR NE CORNER SEC. 16, T.72 N., R.37 W., MONTGOMERY COUNTY, AT BOX CULVERT, 4 MILES NORTH OF STANTON.	0.67	1952-	1977	A	(+)
08811875	SHAKE CR NR YORK-TOWN, IOWA.	LAT 4045XX, LONG 9508XX, IN NW 1/4 SEC. 22, T.69 N., R.37 W., PAGE COUNTY, AT BRIDGE ON STATE HIGHWAY 2, 1.5 MILES NE OF YORKTOWN.	9.10	1966-	08-28-77	94.83	1,700

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	DATE	ANNUAL MAXIMUM GAGE		DIS-CHARGE (CFS)
						HEIGHT (FEET)		
MOSAWY RIVER BASIN								
08818290	W MOSAWY R AT MASSENA, IOWA.	LAT 4118XX, LONG 9445XX, IN SE 1/4 SEC. 33, T.78 N., R.34 W., CASS COUNTY, AT BRIDGE ON STATE HIGHWAY 148, AT SE CORNER OF MASSENA.	23.4	1986-	1977	A		(+)
PLATTE RIVER BASIN								
08818598	PLATTE R NR STRINGTOWN, IOWA.	LAT 4089XX, LONG 9430XX, IN SE 1/4 SEC. 2, T.71 N., R.32 W., ADAMS COUNTY, AT BRIDGE ON U.S. HIGHWAY 34, 3.8 MILES EAST OF STRINGTOWN.	51.7	1986-	09-03-77	90.23		1,080
08819110	MB 102 R NR GRAVITY, IOWA.	LAT 4050XX, LONG 9444XX, IN SE 1/4 SEC. 27, T.70 N., R.34 W., TAYLOR COUNTY, AT BRIDGE ON STATE HIGHWAY 148, 4.8 MILES NORTH OF GRAVITY.	33.5	1986-	08-28-77	81.50		950
CHARITON RIVER BASIN								
08903980	CHARITON R NR UDELL, IOWA.	LAT 404853, LONG 925012, IN NE 1/4 SEC. 17, T.89 N., R.17 W., APPANOOSE CO., AT BRIDGE, 5.0 MILES WEST OF UDELL.	831	1972-	1977	A		(+)
08903990	COOPER CR AT CENTERVILLE, IOWA.	LAT 404802, LONG 925138, IN NW 1/4 SEC. 30, T.69 N., R.17 W., APPANOOSE CO., AT BRIDGE ON STATE HIGHWAY 5, AT NORTH EDGE OF CENTERVILLE.	47.8	1986-	1977	A		(+)
08904040	CHARITON R AT COAL CITY, IOWA.	LAT 403835, LONG 924240, IN NE 1/4 SEC. 20, T.87 N., R.16 W., APPANOOSE CO., AT BRIDGE IN COAL CITY.	818	1972-	1977	A		(+)

* Also a low-flow partial-record station.
 * Discharge not determined.
 A Peak stage did not reach bottom of gage.
 B Revised.
 C Ice affected.

DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1977

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Date	Discharge (ft ³ /s)
Upper Iowa River basin						
Bear Creek	Upper Iowa River	NE1/4 sec.2, T.99 N., R.6 W., Allamakee County, at bridge on State Highway 76, 3.0 mi (4.8 km) south of Dorchester, Iowa.	118	1941-76	10-07-76 11-18-76 03-31-77 04-27-77 05-25-77 06-22-77 08-25-77 09-28-77	61.0 62.1 61.0 59.8 49.4 49.0 48.9 48.4
Turkey River Basin						
South Cedar Creek	Turkey River	NW1/4 sec.31, T.93 N., R.3 W., Clayton County, at bridge on county highway, 2.5 miles south of Garnaville.	5.59	--	04-19-77 06-22-77	0.61 0.61
do	do	SW1/4 sec. 6, T.92 N., R.3 W., Clayton County, at bridge on county highway, 3.5 miles south of Garnaville.	15.15	--	04-19-77 06-22-77	2.13 1.80
Des Moines River basin						
West Buttrick Creek	Buttrick Creek	E1/2 sec.12, T.97 N., R.30 W., Webster County, at bridge on county highway, at east edge of Callender.	11.4	1971	07-06-77	9.0
Des Moines River	Mississippi River	SW1/4 sec.3, T.77 N., R.22 W., Polk County, 0.9 mi (1.4 km) downstream from Middle River and 1.6 mi (2.4 km) southwest of Runnells.	11,020		02-04-77	121
Floyd River basin						
Floyd River	Missouri River	NE1/4 SE1/4 sec.34, T.96 N., R.43 W., Sioux County, 200 ft (61 m) upstream from unnamed slough, near gravel pit, and 1.1 mi (1.8 km) north of Hospers, Iowa.	173	1975	10-28-76 04-12-77 06-08-77 07-12-77	3.11 7.78 3.11 19.8
Boyer River Basin						
*66605400 Boyer River	Missouri River	Lat 4200XX, long 9523XX, in NE1/4 sec.16, T.83 N., R.39 W., Crawford County, at bridge, 2 miles SW of Denison.	817	1957-76	02-03-77 03-03-77 03-17-77 04-05-77 05-02-77 06-01-77 07-12-77 08-01-77 09-07-77	2.13 27.6 40.7 68.9 13.6 17.3 13.6 4.88 27.1
Keg Creek Basin						
*66005900 Keg Creek	Missouri River	Lat 410056, long 954559, in NE1/4 sec.27, T.72 N., R.43 W., Mills County, at bridge, 2 miles SW of Glenwood.	190	1957-76	11-05-76 02-25-77 04-12-77 06-07-77 09-30-77	16.1 28.6 18.6 12.9 35.0

* Also a low-flow partial-record station.

SEEPAGE INVESTIGATIONS

Discharge measurements were made during the 1977 water year on Oct. 6 on the Skunk River, on June 6 on the Little Sioux River and on June 6 and Oct. 18, 1977 on the Ocheyedan River to study channel gains and losses. The reach on the Little Sioux River was previously studied on Oct. 7, 1971 and Oct. 2, 1973.

Stream	Location	Disch ft / s	Temp Time C	Disch ft / s	Temp Time C	pH	Spec Cond umhos
Oct. 6, 1976							
South Skunk River	NE1/4 sec. 13, T.84N., R.24W., Story County.	0.030	1025				
do	Center sec. 23, T.84N., R.24W., above sta. 05470000, Story Co.	0.021	1110				
do	SW1/4 sec. 23, T.84N., R.24W., below sta. 05470000, Story Co.	0.127	1140				
do	SW1/4 sec. 36, T.84N., R.24W., Story County.	0.104	1230				
do	Center sec. 12, T.83N., R.24W., above Squaw C., Story County.	0.004	1250				
do	Gaging sta. 05471000.	0.057	1310				
do	Center sec. 24, T.83N., R.24W., below sewage effluent.	13.2	1340				
do	South line sec. 32, T.83N., R.23W., Story County.	10.3	1410				
June 6, 1977							
Little Sioux River	SE1/4 sec. 17, T.99N., R.37W., Dickinson County.	0.063	0950				
do	SE1/4 sec. 20, T.99N., R.37W., Dickinson County.	0.086	1015				
do	SW1/4 sec. 33, T.99N., R.37W., Dickinson County.	0.066	1100				
do	SW1/4 sec. 3, T.98N., R.37W., Dickinson County.	1.031	1200				
do	SE1/4 sec. 16, T.98N., R.37W., Dickinson County.	0.506	1340				

SEEPAGE INVESTIGATIONS--CONTINUED

Stream	Location	Disch	Time	Temp	Disch	Time	Temp	pH	Spec Cond umhos
		ft /s		C	ft /s		C		
		June 6, 1977				Oct. 18, 1977			
Ocheyedan River	NE1/4 Sec. 12, T.100N., R.41W., Osceola County at State line.	0.0			1.50	1050	9.0	8.2	1,020
do	Low-flow station 06604500	0.09	1140	20.0	3.40	0940	8.5	8.2	950
do	Crest-stage station 06604510	--	--	--	4.02	0910	8.5	8.1	1,000
do	SW1/4 sec. 5, T.99N., R.40W., Osceola County.	0.53	1210	21.0	4.27	1150	9.5	8.3	950
do	SW1/4 sec. 10, T.99N., R.40W., Osceola County.	0.75	1240	21.0	6.63	1245	9.5	8.4	950
do	NW1/4 sec. 23, T.99N., R.40W., Osceola County.				7.11	1345	10.5	8.2	950
Ocheyedan River trib.	SE1/4 sec. 14, T.99N., R.40W., Osceola County.				0.0				
Ocheyedan River	NE1/4 sec. 1, T.98N., R.40W., Osceola County.	0.18	1420	25.0	5.70	1310	10.5	8.6	900
Ocheyedan River trib.	NE1/4 sec. 6, T.98N., R.39W., Osceola County.	0.23	1440	25.0	2.08	1235	10.0	8.4	920
Ocheyedan River	NW1/4 sec. 8, T.98N., R.39W., Osceola County.				8.16	1150	9.5	8.3	900
do	SE1/4SW1/4 sec. 8, T.98N., R.39W., Osceola County.	2.28	1500	25.0	7.97	1100	7.0	8.3	780
L. Ocheyedan River	SW1/4 sec. 36, T.100N., R.41W., Osceola County.	0.0			0.78	1125	9.0	8.1	1,220
do	SE1/4 sec. 12, T.98N., R.41W., Osceola County.				2.47	1215	9.5	8.3	1,100
do	NE1/4 sec. 19, T.98N., R.40W., Osceola County.				2.48	1545	11.5	8.5	1,030
L. Ocheyedan River trib.	NW1/4 sec. 20, T.98N., R.40W., Osceola County.				0.77	1510	9.5	8.4	760
L. Ocheyedan River	West line sec. 28, T.99N., R.40W., Osceola County.				3.71	1440	10.5	8.4	800
do	NE1/4 sec. 32, T.99N., R.40W., Osceola County.	0.49	1310	21.0	3.59	1400	9.5	8.4	1,030
do	Low-flow station 06604600	0.32	1140		5.24	1005	8.5	8.4	940
Ocheyedan River	Low-flow station 06604700	4.17	1200	21.0	15.2	0900	6.0	8.3	920
do	NE1/4 sec. 19, T.97N., R.38W., Clay County.	5.91	1100		20.73	0805	6.5	8.4	900
do	NE1/4 sec. 31, T.97N., R.38W., Clay County.	7.33	1030		23.08	0830	6.5	8.2	900
do	SW1/4 sec. 10, T.96N., R.38W., Clay County.	7.65	1000	22.0	27.24	0900	6.5	8.2	910
do	SE1/4NW1/4 sec. 11, T.96N., R.38W., Clay County.				24.83	0925	6.5	8.1	960
Ocheyedan River trib.	NE1/4SE1/4 sec. 12, T.96N., R.38W., Clay County.	0.0			0.42	0955	7.0	8.1	1,580
Ocheyedan River	SW1/4NW1/4 sec. 7, T.96N., R.37W., Clay County.	10.17	0845	22.0	25.29	1005	6.5	8.1	950
Stoney Creek	Low-flow station 06604900	1.47	1645		5.72	1035	6.5	8.3	850
Ocheyedan River	SW1/4SW1/4 sec. 8, T.96N., R.37W., downstream from Stoney Creek, Clay County.	10.34	0925		25.94	1105	6.5	8.2	920
do	Low-flow station 06605000	11.03	1540		35.2	1130	6.5	8.2	910

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

Water-quality partial-record stations are particular sites where chemical-quality, biological and or sediment data are collected systematically over a period of years for use in hydrologic analyses. The data are collected usually less than quarterly.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)
UPPER IOWA RIVER BASIN					
05387300 - UPPER IOWA R AT CHESTER, IOWA (LAT 43 30 00 LONG 092 22 00)					
JUL , 1977	13...	1325	8.3	230	8.6 27.0
05387400 - UPPER IOWA R NR KENDALVILLE, IOWA (LAT 43 28 00 LONG 092 02 00)					
JUL , 1977	13...	0945	20	200	8.6 22.0
05388100 - CANOE CR NR DECORAH, IOWA (LAT 43 21 00 LONG 091 41 00)					
JUL , 1977	14...	0925	7.6	480	7.9 24.0
05388300 - BEAR CR NR HIGHLANDVILLE, IOWA (LAT 43 27 00 LONG 091 37 00)					
JUL , 1977	14...	1025	20	390	7.8 20.6
VILLAGE CREEK BASIN					
05388350 - VILLAGE CREEK AT VILLAGE CREEK, IOWA (LAT 43 18 40 LONG 091 14 12)					
JUL , 1977	14...	1300	23	470	8.0 26.6
YELLOW RIVER BASIN					
05388900 - YELLOW R AT MYRON, IOWA (LAT 43 10 00 LONG 091 32 00)					
JUL , 1977	14...	1600	8.1	400	7.9 24.0
05389000 - YELLOW RIVER AT ION, IOWA (LAT 43 07 00 LONG 091 16 00)					
JUL , 1977	14...	1455	32	470	8.3 --
TURKEY RIVER BASIN					
05411550 - NB TURKEY R NR VERNON SPRINGS, IOWA (LAT 43 21 00 LONG 092 11 00)					
JUL , 1977	13...	1145	1.9	250	8.4 25.0
05411650 - TURKEY R NR VERNON SPRINGS, IOWA (LAT 43 20 00 LONG 092 07 00)					
JUL , 1977	13...	1105	4.0	200	8.4 25.0
05411820 - L TURKEY R NR MAUCOMA, IOWA (LAT 43 01 00 LONG 091 55 00)					
JUL , 1977	13...	1015	9.1	380	8.2 25.0
05411700 - CRANE CREEK NEAR LOURDES, IOWA (LAT 43 15 00 LONG 092 19 00)					
JUL , 1977	13...	1620	1.6	210	8.7 30.0
05411800 - L TURKEY R NR ALPHA, IOWA (LAT 43 01 00 LONG 091 57 00)					
JUL , 1977	13...	0900	26	310	8.4 23.0

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)
TURKEY RIVER BASIN--CONTINUED					
05412100 - ROBERTS C AB ST. OLAF, IOWA (LAT 42 55 49 LONG 091 23 03)					
JUL , 1977					
13...	1500	8.3	480	8.5	--
05412150 - ROBERTS C AT ST. OLAF, IOWA (LAT 42 55 42 LONG 091 23 01)					
JUL , 1977					
13...	1430	9.1	580	8.4	--
05412200 - VOLGA R NR FAYETTE, IOWA (LAT 42 49 00 LONG 091 53 00)					
JUL , 1977					
12...	1540	4.3	400	8.6	31.0
05412400 - VOLGA R AT LITTLEPORT, IOWA (LAT 42 45 14 LONG 091 22 08)					
JUL , 1977					
12...	1325	52	470	7.8	--
LITTLE MAQUOKETA RIVER BASIN					
05414450 - N FK L MAQUOKETA R NR RICKARDSVILLE, IOWA (LAT 42 35 09 LONG 090 51 20)					
JUL , 1977					
13...	1215	.04	480	8.6	--
MAQUOKETA RIVER BASIN					
05415300 - MAQUOKETA R NR DUNDEE, IOWA (LAT 42 36 55 LONG 091 33 44)					
JUL , 1977					
13...	1530	6.6	500	8.4	--
05416400 - SF MAQUOKETA R NR DUNDEE, IOWA (LAT 42 36 08 LONG 091 35 13)					
JUL , 1977					
13...	1850	1.6	550	8.3	29.0
05417540 - PLUM C NR EARLVILLE, IOWA (LAT 42 26 04 LONG 091 13 58)					
JUL , 1977					
13...	1125	5.8	560	8.1	26.5
05417560 - MAQUOKETA R NR HOPKINTON, IOWA (LAT 42 22 00 LONG 091 16 00)					
JUL , 1977					
13...	1235	55	570	8.2	26.5
05417580 - BUCK CR NR HOPKINTON, IOWA (LAT 42 21 00 LONG 091 17 00)					
JUL , 1977					
13...	1330	3.1	540	8.2	24.5
05417600 - MAQUOKETA R NR SCOTCH GROVE, IOWA (LAT 42 12 00 LONG 091 01 00)					
JUL , 1977					
12...	1525	85	520	8.6	31.5

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)
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MAQUOKETA RIVER BASIN--CONTINUED

05418100 - NF MAQUOKETA R AT DYERSVILLE, IOWA (LAT 42 29 05 LONG 091 08 26)

JUL . 1977					
13...	1020	6.7	610	8.0	21.0

05418200 - WHITEWATER CR AT FILLMORE, IOWA (LAT 42 19 07 LONG 090 55 26)

JUL . 1977					
13...	1035	8.6	540	8.2	--

05418300 - LYTLE C NR BERNARD, IOWA (LAT 42 17 57 LONG 090 46 58)

JUL . 1977					
13...	0945	7.9	600	8.0	--

05418350 - LYTLE CR NR FULTON, IOWA (LAT 42 12 00 LONG 090 45 00)

JUL . 1977					
12...	1700	20	500	8.5	29.0

05418400 - NF MAQUOKETA R NR FULTON, IOWA (LAT 42 11 00 LONG 090 44 00)

JUL . 1977					
12...	1750	79	570	8.5	31.0

05418650 - DEEP CR NR CHARLOTTE, IOWA (LAT 42 00 00 LONG 090 24 00)

JUL . 1977					
12...	1550	2.4	550	8.5	--

05418700 - DEEP CR NR PRESTON, IOWA (LAT 42 03 00 LONG 090 26 00)

JUL . 1977					
12...	1740	2.4	590	8.4	34.0

ELK RIVER BASIN

05420300 - ELK C NR ALMONT, IOWA (LAT 42 00 39 LONG 090 12 05)

JUL . 1977					
12...	1640	4.4	590	8.5	--

WAPSIPINICON RIVER BASIN

05420540 - WAPSIPINCON R NR RICEVILLE, IOWA (LAT 43 20 00 LONG 092 34 00)

JUL . 1977					
13...	1420	5.7	450	8.4	25.5

05420580 - WAPSIPINICON R NR IONIA, IOWA (LAT 43 01 00 LONG 092 23 00)

JUL . 1977					
13...	1320	7.4	330	8.2	25.0

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)
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WAPSIPINICON RIVER BASIN--CONTINUED

05420640 - LITTLE WAPSIPINICON RIVER AT ELMA, IOWA (LAT 43 14 00 LONG 092 27 00)

JUL , 1977					
13...	1525	2.3	250	8.5	29.5

05420660 - WAPSIPINICON R NR NEW HAMPTON, IOWA (LAT 42 59 00 LONG 092 22 00)

JUL , 1977					
13...	1430	12	370	8.4	27.0

05420680 - WAPSIPINICON R NR TRIPOLI, IOWA (LAT 42 05 00 LONG 092 15 00)

JUL , 1977					
14...	1010	15	320	8.1	27.0

05420700 - EF WAPSIPINICON R NR FREDERICKSBURG, IOWA (LAT 43 01 00 LONG 092 13 00)

JUL , 1977					
13...	1145	2.5	320	8.2	24.0

05420720 - EF WAPSIPINICON R NR TRIPOLI, IOWA (LAT 42 51 00 LONG 092 14 00)

JUL , 1977					
13...	1555	5.5	500	8.2	28.0

05420740 - WAPSIPINICON R AT TRIPOLI, IOWA (LAT 42 48 00 LONG 092 14 00)

JUL , 1977					
13...	1700	18	380	8.5	29.0

05420800 - CRANE C NR DENVER, IOWA (LAT 42 38 32 LONG 092 15 21)

JUL , 1977					
14...	1150	3.0	400	8.7	30.0

05420820 - CRANE CR AT DUNKERTON, IOWA (LAT 42 34 00 LONG 092 10 00)

JUL , 1977					
12...	1245	3.1	320	8.4	28.5

05420840 - L WAPSIPINICON R NR WESTGATE, IOWA (LAT 42 47 00 LONG 092 05 00)

JUL , 1977					
12...	1430	5.5	400	8.1	29.5

05420860 - BUCK CR NR LITTLETON, IOWA (LAT 42 35 00 LONG 092 03 00)

JUL , 1977					
14...	1120	.35	560	8.6	31.0

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)
WAPSIPINICON RIVER BASIN--CONTINUED					
05420900 - L WAPSIPINICON R AT LITTLETON, IOWA (LAT 42 33 00 LONG 092 02 00)					
JUL , 1977 14...	1010	14	380	8.5	26.5
05420940 - OTTER CR NR OTTERVILLE, IOWA (LAT 42 33 00 LONG 091 57 00)					
JUL , 1977 14...	0845	4.9	480	8.2	24.5
05421500 - WAPSIPINICON RIVER AT STONE CITY, IOWA (LAT 42 07 00 LONG 091 21 00)					
JUL , 1977 12...	1245	54	470	8.2	29.0
05421550 - BUFFALO CREEK ABOVE WINTHROP, IOWA (LAT 42 30 00 LONG 091 44 00)					
JUL , 1977 14...	0850	.71	330	8.0	--
05421700 - BUFFALO CR NR STONE CITY, IOWA (LAT 42 08 00 LONG 091 21 00)					
JUL , 1977 12...	1345	6.5	480	8.5	31.0
05421800 - YANKEE RUN AT WHEATLAND, IOWA (LAT 41 49 34 LONG 090 50 25)					
JUL , 1977 12...	1300	4.0	650	8.4	31.5
05421850 - MUD CR NR PLAINVIEW, IOWA (LAT 41 42 02 LONG 090 45 26)					
JUL , 1977 12...	1215	12	530	8.4	31.0
05421900 - SILVER C NR DE WITT, IOWA (LAT 41 47 09 LONG 090 33 13)					
JUL , 1977 12...	1355	5.2	600	8.5	34.0
05422100 - BROPHYS C NR LOW MOOR, IOWA (LAT 41 48 55 LONG 090 24 14)					
JUL , 1977 12...	1500	5.4	600	8.3	34.5
FLINT RIVER BASIN					
05469700 - FLINT CR NR BURLINGTON, IOWA (LAT 40 52 00 LONG 091 12 03)					
JUL , 1977 13...	1600	.04	590	8.0	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)
SKUNK RIVER BASIN					
05469800 - S SKUNK R NR ELLSWORTH, IOWA (LAT 42 19 00 LONG 093 35 00)					
JUL . 1977 11...	1015	.04	800	8.0	--
05469950 - MUD LAKE DRAINAGE DITCH 71 AT JEWELL, IOWA (LAT 42 19 05 LONG 093 38 05)					
JUL . 1977 11...	1040	.17	670	8.5	21.0
05469950 - S SKUNK R AT RANDALL, IOWA (LAT 42 14 00 LONG 093 35 00)					
JUL . 1977 11...	0945	.42	790	8.5	16.5
05471050 - S SKUNK R AT COLFAX, IOWA (LAT 41 40 55 LONG 093 14 47)					
JUL . 1977 11...	1105	8.7	720	7.8	24.5
05471400 - ELK CR NR TAINTOR, IOWA (LAT 41 29 00 LONG 092 51 00)					
JUL . 1977 11...	1135	.08	400	8.0	29.5
05472100 - N SKUNK R NR NEWTON, IOWA (LAT 41 47 00 LONG 093 02 00)					
JUL . 1977 11...	1600	.10	420	8.5	34.5
05472300 - N SKUNK R NR SEARSBORO, IOWA (LAT 41 32 00 LONG 092 42 00)					
JUL . 1977 11...	1105	2.8	580	8.1	24.5
05472450 - CEDAR CR NR SIGOURNEY, IOWA (LAT 41 18 42 LONG 092 13 33)					
JUL . 1977 11...	1545	.01	700	7.8	29.5
05473000 - SKUNK RIVER AT COPPOCK, IOWA (LAT 41 10 00 LONG 091 43 00)					
JUL . 1977 11...	1145	46	590	7.2	30.0
05473020 - EF CROOKED CR NR WINFIELD, IOWA (LAT 41 09 00 LONG 091 26 00)					
JUL . 1977 11...	1500	.06	500	8.0	34.0
05473050 - CROOKED C NR COPPOCK, IOWA (LAT 41 12 00 LONG 091 42 00)					
JUL . 1977 11...	1445	.92	600	7.6	30.0

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)
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SKUNK RIVER BASIN--CONTINUED

05473100 - WALNUT CR AT GERMANVILLE, IOWA (LAT 41 06 00 LONG 091 46 00)

JUL , 1977					
11...	1340	.03	610	8.4	33.0

05473200 - CEDAR CR NR HIGHLAND CENTER, IOWA (LAT 41 06 30 LONG 092 21 58)

JUL , 1977					
11...	1040	.01	510	8.5	24.5

05473250 - COMPETINE CR BELOW FORKS NR BATAVIA, IOWA (LAT 41 02 00 LONG 092 07 00)

JUL , 1977					
11...	1255	.01	600	8.3	25.0

05473300 - CEDAR CREEK NR BATAVIA, IOWA (LAT 41 01 00 LONG 092 07 00)

JUL , 1977					
11...	1125	.14	550	8.3	30.5

05473400 - CEDAR CR NR OAKLAND MILLS, IOWA (LAT 40 55 00 LONG 091 40 00)

JUL , 1977					
11...	1530	14	750	8.5	31.0

05473450 - BIG CR AT MT PLEASANT, IOWA (LAT 41 00 00 LONG 091 32 00)

JUL , 1977					
11...	1025	.02	500	8.8	30.0

DEVILS CREEK BASIN

05474200 - SUGAR CR NR FRANKLIN, IOWA (LAT 40 39 54 LONG 091 28 39)

JUL , 1977					
13...	1300	.04	600	--	34.0

05474300 - SUGAR CR NR VIELE, IOWA (LAT 40 36 39 LONG 091 26 24)

JUL , 1977					
13...	1130	.08	660	7.5	34.0

DES MOINES RIVER BASIN

05482100 - N RACCOON R NR REMBRANDT, IOWA (LAT 42 47 00 LONG 095 05 00)

JUL , 1977					
05...	0905	1.9	750	8.6	23.0

05482120 - N RACCOON R NR TRUESDALE, IOWA (LAT 42 42 00 LONG 095 05 00)

JUL , 1977					
05...	1005	2.4	660	8.9	25.0

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNIT'S) (00400)	TEMPER- ATURE (DEG C) (00010)
DES MOINES RIVER BASIN--CONTINUED					
05482220 - B CEDAR CR AT SAC CITY, IOWA (LAT 42 24 00 LONG 094 59 00)					
JUL , 1977	0820	.47	850	8.5	26.0
05482320 - INDIAN CR NR LAKE VIEW, IOWA (LAT 42 20 00 LONG 095 00 00)					
JUL , 1977	1140	1.4	650	8.5	29.0
05482400 - N RACCOON R NR LAKE CITY, IOWA (LAT 42 16 00 LONG 094 50 00)					
JUL , 1977	1300	9.1	600	9.0	27.0
05482410 - LAKE CR NR ROCKWELL CITY, IOWA (LAT 42 24 00 LONG 094 36 00)					
JUL , 1977	1515	.05	4000	8.8	33.5
05483300 - N RACCOON R NR PERRY, IOWA (LAT 41 50 00 LONG 094 08 00)					
JUL , 1977	1250	25	620	--	28.0
05483310 - S RACCOON R NR GUTHRIE CENTER, IOWA (LAT 41 41 00 LONG 094 32 00)					
JUL , 1977	1035	7.6	360	--	26.0
05483320 - BRUSHY FORK CR NR DEDHAM, IOWA (LAT 41 47 00 LONG 094 54 00)					
JUL , 1977	1045	.10	450	8.4	29.5
05483330 - BRUSHY FORK CR NR GUTHRIE CENTER, IOWA (LAT 41 39 00 LONG 094 27 00)					
JUL , 1977	1240	9.9	320	--	32.0
05483340 - S RACCOON R NR MONTEITH, IOWA (LAT 41 38 00 LONG 094 25 00)					
JUL , 1977	1150	22	330	--	31.0
05483350 - N RACCOON R NR CARROLL, IOWA (LAT 42 03 00 LONG 094 49 00)					
JUL , 1977	1055	1.1	1300	8.0	26.0

ANALYSIS OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)
DES MOINES RIVER BASIN--CONTINUED					
05483360 - M RACCOON R NR GLIDDEN, IOWA (LAT 42 03 00 LONG 094 46 00)					
JUL , 1977					
06...	1130	1.5	1200	--	29.5
05483380 - WILLOW CR NR SCRANTON, IOWA (LAT 41 54 00 LONG 094 35 00)					
JUL , 1977					
06...	1000	.15	470	--	26.5
05483400 - WILLOW CR NR BAYARD, IOWA (LAT 41 49 00 LONG 094 33 00)					
JUL , 1977					
06...	0900	2.0	440	--	22.0
06...	1155	1.3	390	--	28.0
05483450 - M RACCOON R NR BAYARD, IOWA (LAT 41 47 00 LONG 094 30 00)					
JUL , 1977					
06...	0945	13	530	--	30.0
06...	1250	12	490	--	28.0
05483660 - M RACCOON R AT REDFIELD, IOWA (LAT 41 36 00 LONG 094 13 00)					
JUL , 1977					
06...	1120	3.7	520	--	29.0
05484200 - PANTHER CR NR ADEL, IOWA (LAT 41 36 00 LONG 094 06 00)					
JUL , 1977					
06...	1430	.03	580	--	32.0
05486100 - MIDDLE R NR CASEY, IOWA (LAT 41 30 00 LONG 094 29 00)					
JUL , 1977					
06...	1055	.02	530	8.4	30.0
05486150 - MIDDLE R AT MIDDLE RIVER, IOWA (LAT 41 20 00 LONG 094 14 00)					
JUL , 1977					
06...	1200	.05	530	8.6	31.5
05486350 - CLANTON CR NR HARTENSDALE, IOWA (LAT 41 21 00 LONG 093 45 00)					
JUL , 1977					
06...	1205	.15	490	8.2	30.0
05486400 - MIDDLE R AT HARTENSDALE, IOWA (LAT 41 22 00 LONG 093 44 00)					
JUL , 1977					
06...	1240	.16	570	8.2	34.5
05487200 - SOUTH R NR INDIANOLA, IOWA (LAT 41 20 00 LONG 093 35 00)					
JUL , 1977					
06...	1025	.17	550	8.2	31.5
05487700 - WHITE BREAST CR NR WOODBURN, IOWA (LAT 40 58 36 LONG 093 35 14)					
APR , 1977					
26...	1600	10	573	8.1	16.1
AUG					
12...	1400	1.5	495	8.2	24.9

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00098)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)
DES MOINES RIVER BASIN--CONTINUED					
05487900 - WHITE BREAST CREEK NEAR NEWBORN, IOWA (LAT 41 10 00 LONG 093 21 00)					
JUL . 1977					
06...	1715	.03	530	8.4	20.0
05487950 - WOLF CREEK NR LACONA, IOWA (LAT 41 13 10 LONG 093 19 40)					
APR . 1977					
26...	1030	.06	580	9.5	12.3
05487980 - WHITE BREAST CREEK NEAR DALLAS, IOWA (LAT 41 14 41 LONG 093 16 08)					
APR . 1977					
21...	1630	106	600	7.9	16.3
AUG					
12...	1700	6.4	320	8.0	27.7
05488050 - BUTCHER CREEK NR KNOXVILLE, IOWA (LAT 41 19 54 LONG 092 10 35)					
APR . 1977					
21...	1100	.29	1900	4.2	14.8
05488300 - ENGLISH R NR HARVEY, IOWA (LAT 41 20 00 LONG 092 07 00)					
APR . 1977					
20...	1800	.64	900	8.2	21.2
05488550 - CEDAR CR AT MELROSE, IOWA (LAT 40 58 00 LONG 093 03 00)					
JUL . 1977					
06...	1245	.09	810	7.9	30.0
05488600 - CEDAR CR NR ALBIA, IOWA (LAT 41 01 00 LONG 092 52 00)					
APR . 1977					
19...	1000	5.0	605	8.2	19.3
AUG					
12...	1000	31	430	7.9	19.3
05488700 - CEDAR CR NR LOVILIA, IOWA (LAT 41 07 00 LONG 092 56 00)					
JUL . 1977					
06...	1100	.04	590	7.4	25.0
05488900 - N CEDAR CR NR MARVSVILLE, IOWA (LAT 41 11 00 LONG 093 01 00)					
APR . 1977					
19...	1800	1.7	645	8.0	20.6
JUL					
07...	1115	.00	720	8.1	29.0
05489000 - CEDAR CREEK NEAR BUSSEY, IOWA (LAT 41 13 09 LONG 092 54 38)					
APR . 1977					
20...	1000	13	740	7.9	17.4
AUG					
11...	1500	163	275	7.5	23.3

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)
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DES MOINES RIVER BASIN--CONTINUED

05489300 - M AVERY CR NR CHILLICUMING, IOWA (LAT 41 06 00 LONG 092 33 00)

JUL . 1977	06...	1740	.03	510	7.6	31.0
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05489900 - SOAP CR NR ASH GROVE, IOWA (LAT 40 51 00 LONG 092 36 00)

JUL . 1977	07...	1800	.01	500	7.9	26.0
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05490100 - SOAP CR NR FLORIS, IOWA (LAT 40 53 37 LONG 092 15 53)

JUL . 1977	07...	1050	1.3	730	7.8	31.0
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05490300 - CHEQUEST CR NR TROY, IOWA (LAT 40 47 17 LONG 092 11 01)

JUL . 1977	07...	1530	.00	660	7.2	30.0
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FOX RIVER BASIN

05494500 - FOX RIVER AT CANTRIL, IOWA (LAT 40 39 35 LONG 092 03 40)

JUL . 1977	07...	1745	.59	610	8.0	30.0
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LITTLE SIOUX RIVER BASIN

06604700 - OCHEYEDAN R NR MAY CITY, IOWA (LAT 43 16 00 LONG 095 27 00)

JUL . 1977	06...	1215	4.2	--	--	21.0
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MODAWAY RIVER BASIN

06816300 - W MODAWAY R NR CUMBERLAND, IOWA (LAT 41 12 00 LONG 094 52 00)

JUL . 1977	19...	1355	.61	370	8.1	29.0
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06816350 - SEVENMILE CR NR LYMAN, IOWA (LAT 41 15 00 LONG 094 59 00)

JUL . 1977	19...	1305	.89	290	7.7	33.5
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06816400 - SEVENMILE CR NR MORTONS MILL, IOWA (LAT 41 06 00 LONG 095 00 00)

JUL . 1977	20...	1435	11	310	7.8	35.5
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06816550 - W MODAWAY R NR VILLISCA, IOWA (LAT 40 55 00 LONG 095 00 00)

JUL . 1977	20...	1335	14	325	8.2	33.5
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06816700 - WF W MODAWAY R NR FONTANELLE, IOWA (LAT 41 19 00 LONG 094 33 00)

JUL . 1977	19...	1500	.34	460	7.8	35.0
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WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095)	PH (UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)
NODAWAY RIVER BASIN--CONTINUED					
06816900 - WF N NODAWAY R NR BRIDGEWATER, IOWA (LAT 41 11 00 LONG 094 39 00)					
JUL , 1977 19...	1605	3.8	360	7.9	33.5
06816900 - M NODAWAY R NR VILLISCA, IOWA (LAT 40 55 00 LONG 094 59 00)					
JUL , 1977 20...	1250	1.9	490	8.2	33.0
06817100 - E NODAWAY R NR SHAMBAUGH, IOWA (LAT 40 38 00 LONG 095 01 00)					
JUL , 1977 20...	1135	.80	460	7.9	32.0
06817200 - NODAWAY R NR BRADYVILLE, IOWA (LAT 40 37 00 LONG 095 01 00)					
JUL , 1977 20...	1055	13	420	8.2	29.0
PLATTE RIVER BASIN					
06818600 - PLATTE R NR KENT, IOWA (LAT 40 57 00 LONG 094 29 00)					
JUL , 1977 19...	1105	.05	720	7.7	27.0
06818700 - PLATTE R NR KNOWLTON, IOWA (LAT 40 52 00 LONG 094 26 00)					
JUL , 1977 19...	1205	.10	650	7.8	31.0
06896100 - GRAND R AT KNOWLTON, IOWA (LAT 40 50 00 LONG 094 20 00)					
JUL , 1977 19...	1435	.01	510	8.1	35.0
06896150 - GRAND R NR BLOCKTON, IOWA (LAT 40 37 00 LONG 094 25 00)					
JUL , 1977 19...	1710	.15	450	8.5	33.0
06897770 - THOMPSON R NR HEBRON, IOWA (LAT 41 14 00 LONG 094 16 00)					
JUL , 1977 19...	1205	1.0	770	8.0	29.0
06897820 - THOMPSON R NR AFTON, IOWA (LAT 41 02 00 LONG 094 06 00)					
JUL , 1977 19...	1315	.02	470	7.9	35.0
06897900 - THOMPSON R NR GRAND RIVER, IOWA (LAT 40 52 00 LONG 093 59 00)					
JUL , 1977 20...	1225	.05	--	--	32.5
06898300 - WELDON R EAST OF LEON, IOWA (LAT 40 45 18 LONG 093 38 05)					
JUL , 1977 20...	1100	.01	--	--	28.5
06898450 - WELDON R NR PLEASANTON, IOWA (LAT 40 35 40 LONG 093 36 20)					
JUL , 1977 20...	0930	.04	--	--	27.0

Carroll County

420335N0945219.1. Local number 94-35-25bdbl. City of Carroll, test hole 1. Drilled observation artesian well in Dakota Sandstone of Early Cretaceous age, diam 8 in, depth 120 ft, cased to 100. Led 1,244 ft above msl. MP top of casing, 4.0 ft above lsd (since July 1975). Highest water level 34.95 below lsd, Sept. 8, 1945; lowest 77.68 below lsd, June 14, 1968. Records available: 1939-49, 1982 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Dec. 16, 1976	81.00	Mar. 8, 1977	80.80	May 18, 1977	71.00	Aug. 13, 1977	75.00

Cerro Gordo County

430496N0932536.1. Local number 98-22-3abbl. Knut Olson. Drilled domestic and stock artesian well in limestone of Devonian age, diam 4 in, depth 134 ft, casing information not available. Led 1,258 ft above msl. MP top of casing, 1.40 ft above lsd. Highest water level 14.34 below lsd, July 3, 1948; lowest 24.80 below lsd, Aug. 4, 1977. Records available: 1941 to current year.

Feb. 14, 1977	21.43	May 12, 1977	24.30	Aug. 4, 1977	24.50
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430927N0931142.1. Local number 98-20-3cdbl. Minneapolis & St. Louis RR. Co. Drilled unused artesian well in St. Peter Sandstone of Middle Ordovician age, diam 12 to 10 in, depth 805 ft, cased 12-in 0-30, 10-in 814-730. Led 1,114 ft above msl. MP top of wood cover, at lsd. Highest water level 32.71 below lsd, May 7, 1951; lowest 59.40 below lsd, Feb. 28, 1959. Records available: 1941 to current year.

May 12, 1977	45.00	Destroyed			
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430806N0931645.1. Local number 98-21-13bccbl. Mason City & Clear Lake RR. Drilled unused artesian well in dolomite in Cedar Valley Limestone of Devonian age, diam 8 in, depth 198 ft, casing information not available. Led 1,165 ft above msl. MP top of well curb, 2.00 ft above lsd. Highest water level 1.73 below lsd, June 28, 1951; lowest 17.26 below lsd, Nov. 18, 1955. Records available: 1940 to current year.

Feb. 15, 1977	9.02	May 12, 1977	8.19	Aug. 4, 1977	9.03
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430858N0932810.1. Local number 98-22-20cadcl. W. Baine and H. Elder. Drilled unused water-table well in glacial drift, diam 9 in, depth 128 ft, casing information not available. Led 1,249 ft above msl. MP hole in side of casing, 1.30 ft above lsd. Highest water level 29.65 below lsd, Mar. 25, 1942; lowest 51.37 below lsd, Aug. 4, 1977. Records available: 1940 to current year.

Feb. 14, 1977	44.23	May 12, 1977	45.82	Aug. 4, 1977	51.37
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Clayton County

424101N0913200.1. Local number 91-6-22acabl. Howard Bowman. Dug unused water-table well in glacial drift, diam 36 in, depth 18 ft, cribbed with brick. Led 1,221 ft above msl. MP top of board platform, 0.08 ft above lsd. Highest water level 3.54 below lsd, May 6, 1960; lowest 10.03 below lsd, Jan. 24, 1955 and Feb. 7, 1977. Records available: 1957 to current year.

Oct. 7, 1976	8.89	Jan. 21, 1977	9.78	Apr. 21, 1977	5.37	July 7, 1977	7.97
Oct. 24	9.32	Feb. 7	10.03	May 7	5.58	July 21	7.52
Nov. 8	8.73	Feb. 21	9.47	May 18	7.03	Aug. 8	4.88
Nov. 21	9.28	Mar. 7	8.69	May 21	6.95	Aug. 22	6.00
Dec. 7	9.47	Mar. 21	7.88	June 7	8.10	Sept. 7	6.95
Dec. 21	9.55	Apr. 7	8.88	June 21	8.38	Sept. 21	7.07
Jan. 7, 1977	9.66						

Recorder discontinued October 1977.

424087N0913200.1. Local number 91-6-22acac1. City of Strawberry Point, well 2. Drilled unused artesian well in dolomite of Silurian age, diam 16 to 10 in, depth 492 ft, cased 16-in 0-130, 12-in 130-181, lined 10-in 229-370. Led 1,219 ft above msl. MP top of recorder platform, 2.10 ft above lsd. Highest water level 114.38 below lsd, May 9, 1973; lowest 133.18 below lsd, Feb. 4, 1988. Records available: 1963 to current year.

Water level at noon, from recorder graph, water year October 1 to September 30

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
8	131.06	131.13	132.04	132.33	132.83	132.89	131.90	131.07	131.73	132.47	132.90	131.74
10	130.94	131.24	132.00	132.03	132.44	132.82	131.50	131.10	131.93	-----	-----	132.11
18	131.05	131.33	131.60	132.08	132.67	132.73	131.60	131.30	132.17	-----	-----	131.62
20	131.01	131.77	131.77	132.36	132.41	132.78	131.33	131.25	132.16	132.94	132.44	131.77
25	131.13	130.98	131.88	132.46	132.37	132.49	131.15	131.30	132.26	132.85	132.32	131.17
Eom	131.46	131.70	132.17	132.46	132.35	132.49	131.29	131.47	132.28	132.65	131.72	131.20

e Estimated

425940N0911947.1. Local number 95-4-32ddddl. Milton and Willis Maier. Drilled stock artesian well in St. Peter Sandstone of Middle Ordovician age, diam 6 in, reported depth 380 ft. Casing information not available. Led 1,090 ft above msl. MP plug in pumpbase, 1.00 ft above lsd. Highest water level 82.56 below lsd, Oct. 8, 1974; lowest 126.56 below lsd, Jan. 13, 1989. Records available: 1957 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Nov. 28, 1976	90.00	Jan. 7, 1977	92.00	May 18, 1977	95.32		

GROUND-WATER LEVELS

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Des Moines County

404944N0911427.1. Local number 89-3-6aabal. Iowa Ordnance Plant, well 3. Drilled unused artesian well in St. Peter Sandstone of Middle Ordovician age, diam 16 in, depth 1,209 ft, cased 0-885. Lsd 717 ft above msl. MP top of platform, 1.61 ft above lsd. Highest water level 162.70 below lsd, Mar. 27, 1980; lowest 201.24 below lsd, Aug. 1, 1977. Records available: 1950 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 17, 1978	198.67	Jan. 22, 1977	198.35	Apr. 18, 1977	198.94	Aug. 1, 1977	201.24
Nov. 20	198.00	Feb. 25	198.19	May 18	199.39	Aug. 29	200.98
Dec. 20	198.11	Mar. 27	198.27	June 25	200.41	Sept. 19	200.89

Recorder discontinued October 1977.

404753N0911428.1. Local number 89-3-6ddcd1. Iowa Ordnance Plant, well 2. Drilled unused artesian well in limestone of Devonian and Mississippian age, diam 19 in, depth 675 ft, cased 0-75. Lsd 599 ft above msl. MP top of platform, 1.91 ft above lsd. Highest water level 74.46 below lsd, Apr. 18, 1975; lowest 83.19 below lsd, Apr. 28, 1950. Records available: 1950 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 20, 1976	77.68	Jan. 22, 1977	77.07	Apr. 18, 1977	78.11	Aug. 1, 1977	78.97
Nov. 29	77.75	Feb. 25	77.82	May 18	78.29	Aug. 29	79.07
Dec. 20	77.63	Mar. 27	77.81	June 25	78.55	Sept. 19	79.80

Recorder discontinued October 1977.

Emmet County

432927N0943458.1. Local number 100-32-11ddcd1. Okampanedan Lake Reserve State Park. Drilled public-supply artesian well in Dakota Sandstone of Early Cretaceous age, diam 6 in, depth 277 ft, casing information not available. Lsd 1,233 ft above msl. MP plug in pumpbase, 0.61 ft above lsd. Highest water level 59.60 below lsd, Dec. 19, 1946; lowest 71.07 below lsd, Aug. 2, 1977. Records available: 1939 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5, 1977	70.59	Jan. 31, 1977	70.45	May 2, 1977	70.80	Aug. 2, 1977	71.07

Grundy County

422605N0925606.1 Local number 88-18-15dbb1. Town of Wallburg. Drilled public-emergency-supply artesian well in English River Siltstone, of Stainbrook (1950), of Early Mississippian age, diam 12 in, depth 280 ft, cased to 128. Lsd 1,069 ft above msl. MP edge of vent pipe, 1.25 ft above lsd. Highest water level 35.95 below lsd, Nov. 18, 1976; lowest 95.81 below lsd, Sept. 27, 1959. Records available: 1950 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Nov. 4, 1978	36.84	Feb. 10, 1977	35.66	June 18, 1977	36.84	Sept. 7, 1977	36.91

Henry County

405810N0913305.2. Local number 71-8-9aba2. City of Mount Pleasant, well 4. Drilled municipal artesian well in Jordan Sandstone of Late Cambrian age, diam 20 to 19 in, depth 1,860 ft, cased 20-in 0-523. Lsd 732 ft above msl. MP hole in pumpbase, 2.25 ft above lsd. Highest water level 132.00 below lsd, May 5, 1946; lowest non pumping 190.00 below lsd, June 6, 1988. Records available: 1946-50, 1953-57, 1959 to current year. Water levels affected by pumping.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 15, 1977	p204.78	June 2, 1977	p204.78				

p Well being pumped.

410848N0913948.1. Local number 73-7-9aabl. Town of Wayland. Dug unused water-table well in glacial drift, diam 4 ft, depth 52 ft, casing information not available. Lsd 745 ft above msl. MP top of cement cover, 6.21 ft above lsd. Highest water level 2.30 below lsd, Sept. 1, 1965; lowest 14.69 below lsd, Feb. 2, 1977. Records available: 1960 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Nov. 2, 1976	11.85	Feb. 2, 1977	14.69	June 2, 1977	10.08	Sept. 8, 1977	9.49

Jasper County

414205N0925920.1. Local number 80-18-31abbb1. P. W. Baukema. Dug stock water-table well in glacial drift, diam 38 in, depth 37 ft, cribbed with brick. Lsd 937 ft above msl. MP top of cement platform, 0.70 ft above lsd (since Apr. 1, 1970). Highest water level 2.67 below lsd, June 10, 1947; lowest 27.15 below lsd, Dec. 18, 1948. Records available: 1940 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Nov. 4, 1976	16.38	Feb. 17, 1977	19.81	June 1, 1977	16.32	Sept. 7, 1977	4.74

GROUND-WATER LEVELS

Johnson County

414107N0913229.1. Local number 79-8-4aaa1. Forest View Trailer Court. Drilled unused artesian well in limestone of Silurian age, diam 8 in, depth 280 ft, cased to 98 ft. Lsd 735 ft above msl. MP top of casing, 1.00 ft above lsd. Highest water level 108.19 ft below lsd, Feb. 14, 1972; lowest 148.01 ft below lsd, July 17, 1971. Records available: 1971 to current year.

Water level at noon, from recorder graph, water year October 1 to September 30
1976-77

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	141.79	129.91	119.44	114.92	112.13	110.21	108.27	128.15	139.17	139.03	139.04	-----
10	140.33	126.38	118.46	114.08	111.43	109.83	108.50	129.97	139.29	139.03	138.40	-----
15	140.01	124.15	116.89	113.64	111.49	109.86	113.90	-----	138.85	140.75	139.25	e134.00
20	138.42	123.12	116.60	113.06	111.00	109.10	120.23	134.01	138.81	139.82	137.30	134.00
25	133.18	121.03	115.86	112.94	110.82	108.63	123.96	135.55	138.57	139.83	135.18	-----
From	130.10	120.61	115.49	112.37	110.58	108.77	126.43	138.41	139.15	e139.08	134.75	e133.65

e Estimated.

414318N0912520.1. Local number 80-5-22cbcb1. Chicago, Rock Island & Pacific RR. Co. Drilled unused water-table well in glacial drift, diam 1 1/4 in, depth 20 ft, screened 18-20 ft. Lsd 753 ft above msl. MP top of casing 4.20 ft above lsd. Highest water level 5.78 below lsd, Sept. 20, 1977; lowest dry, Dec. 2-31, 1955, Nov. 8 to Dec. 31, 1964. Records available: 1941-58, 1958 to current year.

Oct. 21, 1976	Dry	Jan. 20, 1977	Dry	June 22, 1977	17.75	Sept. 20, 1977	5.78
Nov. 23	Dry	Feb. 18	Dry	July 20	17.46		
Dec. 17	Dry	May 17	15.19	Aug. 22	8.90		

414318N0912520.2. Local number 80-5-22cbcb2. Chicago, Rock Island & Pacific RR. Co. Drilled unused artesian well in limestone of Devonian age, diam 5 in, depth 82 ft cased. Lsd 753 ft above msl. MP top of casing 2.80 ft above lsd (since July 1, 1975). Highest water level 8.15 below lsd, Apr. 21, 1952; lowest 21.05 below lsd, Sept. 25, 1957. Records available: 1941 to current year.

Oct. 21, 1976	20.78	Jan. 20, 1977	20.99	May 17, 1977	19.80	Aug. 22, 1977	17.94
Nov. 23	20.95	Feb. 18	20.80	June 22	20.89	Sept. 20	15.41
Dec. 17	20.90	Mar. 18	20.60	July 20	20.90		

Linn County

415422N0914225.1. Local number 82-7-18cdcd1. Lester Petrak. Dug unused water-table well in glacial drift, diam 4 ft, depth 14 ft, cribbed with brick. Lsd 835 ft above msl. MP base of recorder shelter, 0.08 ft above lsd. Highest water level 1.09 below lsd, Aug. 4, 1968; lowest e11.75 below lsd, Feb. 9, 1977. Records available: 1959 to current year.

Water level at noon, from recorder graph, water year October 1 to September 30
1976-77

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	10.10	10.56	e10.88	e11.30	e11.71	9.84	3.62	6.08	7.17	8.23	8.30	4.89
10	10.18	10.60	e10.95	e11.37	e11.71	9.84	3.24	6.27	7.43	8.48	4.74	4.87
15	10.30	10.65	e11.00	e11.43	e11.81	9.06	3.53	6.51	7.84	8.72	4.84	5.02
20	e10.40	10.70	11.11	e11.48	11.12	8.23	-----	6.80	e7.74	8.62	4.08	3.84
25	10.48	10.76	11.17	e11.57	10.94	7.12	5.93	6.62	7.97	8.38	4.45	4.13
From	10.54	e10.83	e11.24	e11.65	10.23	4.28	6.17	6.93	8.14	8.27	4.40	4.48

e Estimated.

415816N0913934.1. Local number 83-7-28adda1. The Kacena Co., Inc. (formerly Colling Radio). Drilled unused artesian well in limestone of Silurian age, diam 10 in, depth 420 ft, cased to 75. Lsd 735 ft above msl. MP top of well cover, 6.15 ft below lsd. Highest water level 51.10 below lsd, Feb. 25, 1963; lowest 93.80 below lsd, Aug. 1, 1975. Records available: 1962 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 21, 1976	86.75	Jan. 20, 1977	82.21	Apr. 2, 1977	80.60	June 22, 1977	84.55
Nov. 23	82.41	Feb. 20	79.87	22	83.68	July 20	87.12
Dec. 20	84.73	Mar. 18	81.33	May 19	83.11	Sept. 21	87.12

Recorder temporarily discontinued because of construction.

415725N0914104.1. Local number 83-7-32acdc1. Floyd Felter. 22nd Ave. SW. and 11th St. SW., Cedar Rapids. Drilled unused artesian well in limestone of Silurian age, diam 8 in, depth 282 ft, cased. Lsd 805 ft above msl. MP plug in well cover, at lsd. Highest water level 75.88 below lsd, Jan. 26, 1942; lowest 107.00 below lsd, Sept. 18, 1978. Records available: 1940 to current year.

Oct. 21, 1976	105.81	Jan. 20, 1977	100.49	Apr. 22, 1977	97.37	July 20, 1977	102.03
Nov. 23	104.70	Feb. 18	100.27	May 17	97.85	Aug. 22	105.84
Dec. 17	105.89	Mar. 18	97.89	June 22	99.28	Sept. 21	104.86

Linn County.--Continued.

4209280913707.1. Local number 84-7-13bcbbl. U.S. Geol. Survey. Drilled observation water-table well in glacial drift, diam 1 1/4 in, depth 17 ft, screened 15-17. Lsd 882 ft above msl. MP top of casing, 0.75 ft above lsd. Highest water level 1.11 below lsd, Mar. 29, 1950; lowest 12.90 below lsd, Dec. 3, 1958. Records available: 1940 to current year.

Oct. 21, 1976	13.82	Jan. 20, 1977	15.19	Apr. 22, 1977	3.10	July 21, 1977	0.79
Nov. 23	14.27	Feb. 18	15.00	May 17	5.98	Aug. 22	3.55
Dec. 20	14.79	Mar. 23	5.65	June 20	7.87	Sept. 21	2.26

Lyon County

432140N0955953.1. Local number 99-44-26dddl. State of Iowa. Drilled unused water-table well in glacial drift, diam 20 in, depth 38 ft, lined with tile. Lsd 375 ft, cased to 295. Lsd 1,375 ft above msl. MP plug in cover over casing, 1.00 ft above lsd. Highest water level 0.09 below lsd, Mar. 2, 1973; lowest 9.74 below lsd, Oct. 24, 1940. Records available: 1940-43, 1947 to current year.

Jan. 1, 1977	8.37	May 8, 1977	3.75	July 12, 1977	4.09		
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432553N0951055.1. Local number 99-45-5abaci. City of Rock Rapids. Drilled unused artesian well in Dakota Sandstone of Early Cretaceous age, diam 10 in, depth 375 ft, cased to 295. Lsd 1,375 ft above msl. MP plug in cover over casing, 1.00 ft above lsd. Highest water level 100.00 below lsd, July 27, 1964; lowest 113.90 below lsd, Nov. 30, 1974. Records available: 1950 to current year.

Jan. 21, 1977	113.84	May 5, 1977	113.60	July 12, 1977	113.84	Aug. 9, 1977	113.86
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Madison County

411727N0934830.1. Local number 75-26-23aaci. Town of St. Charles, No. 1. Drilled unused artesian well in limestone of Mississippian age, diam 10 in, depth 1,058 ft, cased to 857. Lsd 1,067 ft above msl. MP plug in well cover, 1.20 ft above lsd (since Jan. 1, 1971). Highest water level 261.62 below lsd, Nov. 20, 1962; lowest 267.44 below lsd, Sept. 13, 1974. Records available: 1952 to current year. Records prior to April 1970 are from recording gage; subsequent records are periodic tape measurements.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Nov. 4, 1976	268.12	Feb. 17, 1977	267.83	Sept. 9, 1977	268.17		

Marion County

411323N0931426.1. Local number 74-21-11dbcc2. Town of Melcher. Drilled unused water-table well in glacial drift, diam 18 in, depth 25 ft, lined with tile. Lsd 948 ft above msl. MP top of well cover, 0.75 ft above lsd (since June 21, 1976). Highest water level 0.12 below lsd, Apr. 24, 1976; lowest 16.27 below lsd, Oct. 22, 1953. Records available: 1950 to current year.

Oct. 12, 1976	6.25	Dec. 29, 1976	5.54	Mar. 23, 1977	5.48	July 9, 1977	6.99
23	6.25	Jan. 13, 1977	6.50	Apr. 12	5.15	22	7.75
Nov. 4	6.13	24	6.36	26	5.95	Aug. 17	5.95
10	6.22	Feb. 11	6.29	May 14	5.15	25	6.33
24	6.25	25	6.35	26	5.33	Sept. 13	4.65
Dec. 11	6.40	Mar. 12	4.75	June 17	5.83	24	4.30

411541N0931234.1. Local number 75-20-31bbad1. Miss Amanda Elliot. Drilled unused water-table well in glacial drift, diam 18 in, depth 29 ft, lined with tile. Lsd 920 ft above msl. MP hole in top of plank platform, 1.31 ft above lsd. Highest water level 2.31 below lsd, June 11, 1947; lowest 27.42 below lsd, Oct. 29, 1953. Records available: 1940 to current year.

Nov. 4, 1976	14.53	Feb. 17, 1977	16.23	Destroyed			
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Marshall County

420355N0925347.1. Local number 84-18-24dcal. City of Marshalltown. Drilled unused artesian well in glacial sand and gravel of Pleistocene age, diam 8 in, depth 200 ft, cased to 190, screened 190-200. Lsd 871 ft above msl. MP top of casing, at lsd. Highest water level 4.92 below lsd, July 13, 1951; lowest 46.40 below lsd, Feb. 10, 1977. Records available: 1949 to current year.

Nov. 4, 1976	45.30	Feb. 10, 1977	46.40	June 16, 1977	44.61	Sept. 9, 1977	39.30
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Montgomery County

405935N0950129.1. Local number 71-35-6dad1. State of Iowa. Drilled observation water-table well in glacial drift, diam 1 1/4 in, depth 38 ft, screened 36-38. Lsd 1,081 ft above msl. MP top of casing, 3.02 ft above lsd. Highest water level 2.52 below lsd, May 31, 1951; lowest 30.99 below lsd, Apr. 26, 1950. Records available: 1950 to current year.

Oct. 15, 1976	14.16	Jan. 17, 1977	13.83	Apr. 17, 1977	14.45	July 11, 1977	14.82
Nov. 16	14.47	Feb. 12	14.84	May 18	14.57	Aug. 13	14.24
Dec. 14	13.74	Mar. 17	14.72	June 16	14.86	Sept. 18	13.26

GROUND-WATER LEVELS

Muscatine County

412120N0910804.4. Local number 78-2-30cbasl. U.S. Geol. Survey. Drilled observation water-table well in alluvial sand and gravel, diam 8 in, depth 27 ft, screened 24-27. Lsd 548 ft above msl. MP base of recorder shelter, 9.70 ft above lsd. Highest water level 8.51 below lsd, May 18, 1973; lowest 19.03 below lsd, June 30, 1977. Records available: 1966 to current year.

Water level at noon, from recorder graph, water year October 1 to September 30
1976-77

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	14.24	e14.38	e14.57	14.68	e14.88	14.98	e14.91	14.18	14.21	14.68	e14.90	12.88
10	14.28	e14.41	e14.60	e14.68	e14.87	14.99	14.32	14.20	14.84	14.90	e14.30	12.88
15	14.30	14.44	e14.63	e14.77	14.90	15.01	14.22	14.22	14.74	15.02	15.13	12.88
20	14.31	14.47	14.63	e14.79	14.92	15.00	14.18	14.24	14.85	14.95	12.90	12.92
25	14.33	14.49	14.65	e14.81	14.94	15.00	14.17	14.26	14.98	14.75	12.84	
End	e14.38	e14.53	14.66	e14.83	14.95	14.88	14.17	14.29	15.03	14.75	12.84	

e Estimated

Page County

404257N0951512.1. Local number 68-38-7ccal. William Grayman. Drilled unused water-table well in glacial drift, diam 12 in, depth 44 ft, lined with tile. Lsd 1,087 ft above msl. MP top of 3/4-in pipe inserted through board cover, 1.50 ft above lsd. Highest water level 1.44 below lsd, June 23, 1947; lowest 20.98 below lsd, Nov. 24, 1958. Records available: 1934 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 18, 1976	14.02	Jan. 14, 1977	14.85	Apr. 15, 1977	14.18	July 12, 1977	14.22
Nov. 18	14.24	Feb. 11	14.63	May 16	13.17	Aug. 17	8.62
Dec. 14	14.68	Mar. 14	15.24	June 23	13.85	Sept. 16	8.72

Sac County

423013N0951783.1. Local number 89-38-26basal. City of Schaller. Drilled public-emergency-supply artesian well in Dakota Sandstone of Early Cretaceous age, diam 10 to 8 in, depth 382 ft, cased to 352, perforated 304-382. Lsd 1,376 ft above msl. MP edge of pump breather pipe, 1.80 ft above lsd. Highest water level 210.64 below lsd, Mar. 25, 1949; lowest 240.10 below lsd, May 24, 1977. Records available: 1940 to current year.

Dec. 22, 1976	230.40	Feb. 17, 1977	229.65	May 24, 1977	240.10	Aug. 8, 1977	230.25
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Webster County

421837N0940836.1. Local number 87-28-29cccd1. Ransom Helms. Drilled unused water-table well in glacial drift, diam 12 in, depth 42 ft, lined with tile. Lsd 1,165 ft above msl. MP top of platform, 4.10 ft above lsd. Highest water level 0.05 below lsd, Aug. 1, 1972; lowest 13.52 below lsd, Mar. 12, 1956. Records available: 1942 to current year.

Oct. 20, 1976	e 7.80	Jan. 20, 1977	11.55	Apr. 20, 1977	5.30	July 20, 1977	7.67
Nov. 20	e10.00	Feb. 22	11.23	May 20	5.00	Aug. 22	3.48
Dec. 21	10.93	Mar. 21	11.13	June 20	7.40	Sept. 20	3.49

e Estimated.

423013N0942147.1. Local number 89-30-22ddasl. Johnson Township Consolidated School, Barnum. Drilled unused artesian well in sandstone of Cretaceous age, diam 4 in, reported depth 208 ft, cased to bottom, perforated 203-208, measured depth 203 ft. Lsd 1,174 ft above msl. MP top of casing, 8.40 ft below lsd. Highest water level 30.86 below lsd, July 2, 1945; lowest 44.55 below lsd, May 24, 1977. Records available: 1942-45, 1947 to current year.

Feb. 17, 1977	38.00	May 24, 1977	44.55	Aug. 8, 1977	44.45
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Note.--Measurements were discontinued in 1977 for the following wells:
Cerro Gordo County 430927N0931142.1 Local number 95-20-3cddb1.
Greene County 420051N0942233.1 Local number 83-30-8cbb1.
Marion County 411841N0931234.1 Local number 75-20-31bbad1.

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October 13, 1977

FACTORS FOR CONVERTING U.S. CUSTOMARY UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the U.S. customary units published herein to the International System of Units (SI). Subsequent reports will contain both the U.S. customary and SI unit equivalents in the station manuscript descriptions until such time that all data will be published in SI units.

Multiply U.S. customary units	By	To obtain SI units
<i>Length</i>		
inches (in)	2.54×10^1	millimeters (mm)
feet (ft)	2.54×10^{-2}	meters (m)
miles (mi)	3.048×10^{-1}	meters (m)
	1.609×10^0	kilometers (km)
<i>Area</i>		
acres	4.047×10^3	square meters (m ²)
	4.047×10^{-1}	square hectometers (hm ²)
square miles (mi ²)	4.047×10^{-3}	square kilometers (km ²)
	2.590×10^0	square kilometers (km ²)
<i>Volume</i>		
gallons (gal)	3.785×10^0	liters (L)
	3.785×10^0	cubic decimeters (dm ³)
million gallons	3.785×10^{-3}	cubic meters (m ³)
	3.785×10^{-3}	cubic meters (m ³)
cubic feet (ft ³)	3.785×10^{-3}	cubic hectometers (hm ³)
	2.832×10^1	cubic decimeters (dm ³)
cfs-days	2.832×10^{-2}	cubic meters (m ³)
	2.447×10^3	cubic meters (m ³)
acre-feet (acre-ft)	2.447×10^{-3}	cubic hectometers (hm ³)
	1.233×10^3	cubic meters (m ³)
	1.233×10^{-3}	cubic hectometers (hm ³)
	1.233×10^{-6}	cubic kilometers (km ³)
<i>Flow</i>		
cubic feet per second (ft ³ /s)	2.832×10^1	liters per second (L/s)
	2.832×10^1	cubic decimeters per second (dm ³ /s)
gallons per minute (gal/min)	2.832×10^{-2}	cubic meters per second (m ³ /s)
	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm ³ /s)
million gallons per day	6.309×10^{-5}	cubic meters per second (m ³ /s)
	4.381×10^1	cubic decimeters per second (dm ³ /s)
	4.381×10^{-2}	cubic meters per second (m ³ /s)
<i>Mass</i>		
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons